Inaugural Address

ON

THE MEDICAL NEEDS OF INDIA.

Delivered at the London School of Medicine for Women on October 1st, 1913,

BY

SURG.-GEN. SIR CHARLES PARDEY LUKIS, K.C.S.I.,

DIRECTOR-GENERAL, INDIAN MEDICAL SERVICE.

The problems connected with the preservation of the public health in India are extremely complex, especially as regards the remedying of sanitary defects, the education of the people in personal and domestic hygiene, the saving of infant life, and the protection of women from the dangers incidental to childbirth.

The time at my disposal being limited, I do not propose to-day to deal with the larger sanitary questions, neither is it necessary that I should do so. Under present conditions such questions are outside the scope of the work of the medical woman in India. I must, however, say a few words on the subject of the education of the Indian public in personal and domestic hygiene, because it is the prejudices of the vast majority of the populace, their conservatism, and their suspicion of any innovation or change, which constitutes such a formidable obstacle to rapid progress in medical or sanitary matters. In order to illustrate my point, let us consider briefly some of the conditions influencing the spread in India of those three deadly diseases—malaria, plague, and tuberculosis. Malaria, as you know, is conveyed from man to man by certain species of Anopheline mosquitos. For a long time it was thought that all malaria arose from swamps, but recent observations have shown that this is not the case. Thus the researches of Liston and Bentley have proved that the severe epidemic of malaria from which Bombay city has suffered of recent years does not arise from the surrounding swamps, but is conveyed by a species of domestic mosquito which breeds in the wells attached to private houses. Similarly much of the malaria which occurs in up-country stations is due to the breeding of mosquitos in collections of stagnant water in and around habitations. It is obvious, therefore, that the attempts of Government to stamp out malaria are apt to be nullified if householders refuse to close down private wells, which are a danger to the community, or persist in allowing broken earthen pots, old kerosene oil tins, etc., to accumulate in their yards, and thus furnish breeding-grounds for mosquitos.

Then again as regards epidemic plague, the history of which as it occurs amongst human beings is as follows: Plague occurs amongst the rats in a house. So soon as the rats begin to die the remainder at once migrate from the infected spot, but they leave behind them their nests, and in these nests are a large number of rat fleas which contain plague bacilli, owing to their having sucked the blood of infected rats. Presently these fleas become hungry, and, finding no rats, they sally forth and bite human beings, thus infecting them with plague. The question of the prevention of plague is, therefore, chiefly one of domestic hygiene, and it is essential that the public should realize the danger of permitting collections of rubbish in and about their houses behind which rats can build their nests. They should be taught also not to throw about in the vicinity of their houses remnants of food which will attract rats, and in fact every precaution should be taken to prevent the rat from becoming a domestic animal. The rat is not a domestic animal in the houses of Europeans in India, but it is a domestic animal in the houses of a large number of Indians, and this I believe to be the explanation of the difference in the plague incidence on the two races.

I now come to the subject of tuberculosis. Nowadays there is a great boom in tropical diseases, and it is right that there should be; but one ill effect of this is that it is apt to distract attention from diseases which, although not strictly speaking tropical in origin, nevertheless create enormous havoc in tropical countries. The chief of these is tuberculosis, the mortality from which in some of our larger native cities exceeds that of either Birmingham or Glasgow. Tuberculosis in India, however, differs from that disease in England in one striking particular—it is invariably of human and not of bovine origin. For this there are two explanations; the first is that Indian cattle are practically free from tuberculosis. When I made this statement at the recent Conference on Infant Mortality it was received with a certain amount of scepticism, but I am glad to learn from competent observers that similar conditions prevail both in Ceylon and in the Malay Peninsula. The second explanation is that Indians never drink unboiled milk, consequently milk may be regarded as a negligible factor in the spread of tuberculosis in India, and the disease is always conveyed by human agency as the result of defective ventilation, over-crowding, and indiscriminate spitting. The Government and the local authorities are doing all in their power in the matter of town planning and the provision of sufficient light and air in tenements, and by the prohibition of expectoration in public places, but their efforts will be of little or no avail until the Indian public learn the danger of sleeping in closed rooms and of permitting indiscriminate spitting within house limits.

Hitherto the teaching of personal and domestic hygiene in India has been very unsatisfactory. It has been regarded merely as a school lesson to be learnt by rote, and I doubt very much whether the scholars attach any importance to it or regulate their lives by its precepts. You may, for instance, hear a boy state in school, "I must eat clean food, I must drink pure water," and then as soon as school is over he will scamper off and eat sweetmeats from a fly-infected open stall in the bazaar, assuaging his thirst with a draught of water from the village tank, which is indiscriminately used for drinking purposes, for bathing, and for the washing of clothes.

Efforts are now being made both by Government and by the St. John Ambulance Association to render instruction in hygiene more practical by means of lantern demonstrations, popular lectures, and the distribution of illustrated leaflets, but even if these efforts are as successful as it is hoped they may be, they will not reach the root of the evil, for they will only instruct the men of the community. This is my reason and excuse for bringing the matter to your notice to-day. Ladies who have spent all their lives in England are apt to regard their Indian sisters as being very down-trodden and oppressed. This is a grave mistake. Out of doors the man is lord of creation, but once he is inside the house he is absolutely controlled by his wife and mother in all matters concerning domestic economy and the family life. Indeed I know of no country where the woman is more absolutely the mistress of the house than she is in India, and I am convinced that we shall never make any real headway in promoting the knowledge of domestic and personal hygiene until we have convinced the women of India as to its necessity and they have thrown their powerful influence into the scale. Here the medical man is powerless—the *purdah* bars the way, and it is to the medical woman that we must look for educational propaganda inside the zenana.

I have dealt with this subject at some length because I wish to lay stress upon the fact that the work of the medical woman in India should not be confined merely to the care of women and children. They may do admirable pioneer work by disseminating knowledge of the laws of health and the value of preventive measures, thus conferring an incalculable boon upon the populace as a whole, both by showing them how to prevent the spread of communicable disease and by teaching them how to increase the natural powers of resistance against pathogenic germs.

The subject of infant mortality in India has of recent years attracted considerable attention. That it is a subject imperatively demanding such attention cannot be denied. In 1911 4,752,152 male children and 4,457,551 females were born in India, and in the same year the actual number of deaths of children under 1 year of age was 1,016,823 males and 873,677 females—that is to say, roughly speaking, about one-fifth of the children born died within the first year of their life. It is very difficult to arrive at the actual causes of this high rate of mortality. The figures at our disposal are often of doubtful accuracy,

and the comparison of figures from different localities is most fallacious. A relatively high reported death-rate frequently means merely that the registration of vital statistics in this particular locality is carried out more satisfactorily than in some other place with a more enviable, but totally undeserved, reputation, and one of the greatest of our present necessities is an improvement in our methods of collecting vital statistics. In most of the large cities and towns of India the number of births and deaths reported probably approximates to the truth, but with regard to the causes of death even approximate accuracy is rarely attained. This is inevitable when the diagnosis of the cause of death is in the vast majority of instances made by persons with no medical training. Moreover, when death is due to infectious disease, wilful concealment frequently occurs.

As the result of inquiries made in four large towns in India, Major Robertson, the Sanitary Commissioner with the Government of India, is of opinion that the causes of infant mortality, taken in the order of their importance, may be classified under four headings:

1. Malaria, operating both directly on the infant and indirectly through the mother.
2. Diseases due to insanitary surroundings.
3. Diseases due to ignorance on the part of the mother with regard to the feeding and care of the infant.
4. Accidents of childbirth and diseases attendant thereon.

As regards the last two groups, I believe that early marriage is very largely responsible for the high rate of infant mortality in India, where marriage is almost universal and at the earliest practicable age; and there can be no doubt that much of this mortality is due to the ignorance and immaturity of the mothers. The instruction of these young mothers, therefore, in all matters connected with ante-natal and post-natal hygiene is a point deserving of consideration by all medical women practising in India.

Another adverse factor, vying in importance with that of early marriage in determining the excessive mortality, is to be found in the primitive methods of midwifery almost universally in vogue. Not only do such methods lead directly to the death of the infant from tetanus and other infections, but they also indirectly increase the infant mortality by depriving the children of their natural nourishment; for it must be remembered that the unsatisfactory substitutes given as food to children deprived of their mothers' milk, the death of the mother, or even the drying up of her milk as the result of sepsis, in the majority of cases practically seals the fate of the child, I need not dilate upon the suffering and loss of life which result from these primitive methods of midwifery. As you probably are aware, in India the deaths in childbirth are about three times as numerous as they are in England; the only remedy for this deplorable state of affairs is that medical women, by their precepts and practice, should create confidence in modern midwifery and devote themselves to the systematic instruction of the native midwives.

I think I have said enough to bear out my statement that one of the most urgent needs of India at the present time is an adequate supply of suitable and fully-trained medical women, and I now pass on to the consideration of the manner in which it is proposed to supply this need.

The work of supplying female medical aid to the women of India is chiefly performed by two voluntary agencies—that of the missionaries and what is generally known as the Lady Dufferin Association. Of late years the work of the latter association has been subjected to much criticism, and there can be no doubt that the conditions of service have not been such as are calculated to attract the right stamp of medical woman. Various complaints have been made, especially as regards subordination to men, liability to sudden dismissal, absence of incremental rates of pay or provision for retirement, or any definite rules as regards furlough and study leave. I do not propose to enter here into the controversy that has raged round this subject, but I shall merely state for your information the manner in which it is now proposed to redress the legitimate grievances and improve the position of medical women serving under the Dufferin Association.

In the first place, it may be as well to mention that the Government of India has decided definitely against the creation of a State service of medical women; it has, however, approved of a grant of £10,000 per annum for a service of medical women under the Central Committee of the Dufferin Association. This service will be called "The Women's Medical Service for India," and I have received the permission of the Central Committee to sketch in outline the conditions of service, which received final sanction at the meeting held in Simla early last month.

The service in the first instance will not exceed twenty-five first-class medical women, one-fifth of whom will constitute a leave reserve. Its members, subject to certain provisions, which I will mention later on, will be under the direction and control of the Central Committee of the Dufferin Association. I may mention here that there is already one medical woman serving on this committee, and that the question of adding a second is now under consideration.

Recruitment for the service will be made in two ways:

(*a*) *In India*—by a medical subcommittee of the Central Committee, which shall include the Director-General of the Indian Medical Service, the Surgeon to His Excellency the Viceroy (who is also the Honorary Secretary to the Central Committee), and a first-class medical woman.

(*b*) *In England*—by a subcommittee consisting of a medical man and two medical women conversant with Indian conditions, to be nominated by the Home Committee of the Dufferin Association.

Such subcommittees will perform the duties of a medical board, examine candidates for physical fitness, and give permission to return to duty after invaliding, and in India the subcommittee will have power to appoint temporary local boards in cases of emergency.

The Central Committee will decide what proportion of the members of this service shall be recruited in England and in India respectively. In the original constitution of the service duly qualified medical women who are already in the service of, or who have rendered approved service to the Dufferin Association, will have first claim to appointment, and thereafter special consideration will be paid to the claims of candidates who have qualified in local institutions, and of those who are natives of India.

All newly-appointed members of the service must be British subjects. They must be not less than 24 or more than 30 years of age at the time of recruitment, and they will, except under special circumstances, be retired on attaining the age of 48. They must possess a medical qualification registrable in the United Kingdom under the Medical Act, or an Indian or Colonial qualification higher than the L.M.S., and they must produce certificates of health and character. They will engage for general service anywhere in India or Burma, and they will then be appointed by the Central Committee to serve in different provinces. On first appointment they will serve a period of probation in one of the larger hospitals, extending in the case of those recruited in England to six months, and in the case of those recruited in India to three months. At the end of such period of probation their appointment will be confirmed or terminated, as the case may be, by order of the Central Committee, and after confirmation service will be terminable at any time by three months' notice on either side.

Members of the service will receive a salary of Rs. 350 per mensem during their period of probation, and thereafter a salary of Rs. 400 from the first to the fourth year inclusive, Rs. 450 from the fifth to the seventh year, Rs. 500 from the eighth to the tenth year, and Rs. 550 after the tenth year, but no member will be confirmed in the Rs. 400 grade unless she passes her examination in the vernacular within one year of her appointment. In addition, suitable quarters will be provided free of rent, or house rent will be given in lieu thereof. There will also be a provident fund as a provision for retirement.

Members of the service will draw travelling allowance at the usual rates, and they will be entitled, in addition to the usual privilege leave, to eight months' furlough after four years' service and to study leave up to nine months. Whilst on furlough they will draw half pay, and two-thirds whilst on study leave. They will be permitted to engage in private practice provided that such private practice does not interfere with the performance of their official duties.

When members of the service are appointed to provinces they will forthwith become subordinate to the Provincial Committee, which shall have powers of punishment, including suspension, but the power of removal from the service or dismissal for inefficiency, misconduct, or other valid cause, will be vested absolutely in the Central Committee.

Any member of the service who has been recruited in England, in the event of non-confirmation at the end of the period of probation or on removal or dismissal, will receive a sum sufficient to cover her return journey to England.

Every hospital will be in charge of a local committee, and the medical woman in independent charge of such hospital will be entitled to attend all meetings of the local committee. She will have full professional control of her hospital, and such powers of administrative control as may be determined by the authorities financially concerned. She will not be under the civil surgeon in any way, but should she wish to do so she can always call him in for professional assistance or consultation.

As regards the inspection of women's hospitals, it is proposed to associate with the Inspector-General of Civil Hospitals one of the senior medical women in each province, who will receive extra pay and travelling allowance for this purpose, but she will not be a full-time officer. She will make her visits of inspection in addition to any which the Inspector-General of Civil Hospitals may think fit to make himself, due regard being paid to *purdah*. She will also be expected to give sympathetic judgement, opinion, and advice to the younger women in charge of hospitals. It is proposed also that the inspection of the minor female branch dispensaries shall be entrusted to the medical woman in charge of the large hospital at the head quarters of the district concerned.

Lastly, the Central Committee, who will now be mainly responsible for the salaries of the medical women of this service, hope that the Provincial Committees will devote the funds they will thus save to increase their staff of female assistant surgeons, who will work as assistants to the medical women in charge of the larger hospitals.

This, ladies, is the scheme, which I think you will agree remedies all legitimate grievances and gives the medical woman in India an assured and definite position. It requires no further explanation on my part; but I should like, with your permission, to reply to one criticism that has been made on it, and also to offer a word of advice to any candidate who may think of entering the new service.

The criticism to which I refer is to the effect that the rate of pay on first joining is inadequate, and that it will not attract the right type of woman. In reply to that I would point out that, when you take into consideration the free house, the terms are better than those offered to young officers of the Indian Medical Service. Moreover, from the very beginning the medical woman has the opportunity of private practice; whereas the young officer of the Indian Medical Service spends his first five or six years in military employ, where he can have little or no private practice, whilst he has in addition all the expenses incidental to regimental life.

My word of advice refers to this same question of private practice. If you wish to be of real service to your poorer patients and also to be a successful practitioner amongst the better classes, I recommend you to devote your six months of probation not merely to the study of tropical diseases, but also to learning the language and to making yourself acquainted with the customs and prejudices of the country. Learn to speak Hindustani as it is spoken by educated Indians; be not content with the horrible jargon that the average European uses in conversation with his servants. Study, moreover, Indian prejudices, especially as regards rules of diet in connexion with illness. If you fail to do so much trouble awaits you. When you are called in to see an Indian patient, after the diagnosis, prognosis, and treatment have been discussed, the last question that will be put to you is, "What about diet?" If then you order an article of diet which according to Indian ideas is contraindicated in the class of disease with which you are dealing; if, for instance, you commit the horrible blunder of ordering milk in a case of bronchial catarrh or rice for a patient suffering from malarial fever, the chances are that so soon as your back is turned your prescription will be torn up, and you will never be called in again by that family. Above all, do not fall into the grievous error of regarding these prejudices as nonsensical. The longer you live in India and the more intimate your connexion with Indians the greater will be your appreciation of the wisdom of the ancients, and the more completely will you realize that the West still has much to learn from the East.

It is obvious from what you know of the size of India, and from what I have told you as regards the medical needs of that vast continent, that these needs cannot be supplied merely by European agency, whether it be that of medical men or medical women. If, therefore, female medical aid to the women of India is ever to become a reality, it will be necessary to utilize indigenous talent, and one of the most important duties of the new service of medical women will be to train Indian women and domiciled Europeans and Anglo-Indians for the profession of medicine. Hitherto, owing to the absence of a medical school exclusively for women, it has been practically impossible to obtain Indian women of a suitable class, but this difficulty has now been overcome. Her Excellency Lady Hardinge has collected a very large sum of money which will suffice for the construction and equipment of a thoroughly up-to-date medical college for women, attached to which will be a female hospital of about 150 beds and a training school for nurses. The Government of India has given an excellent site on the new Imperial Enclave at Delhi, within half a mile of the railway station. We hope also to obtain a grant sufficient to cover the annual up-keep. This college will be entirely staffed by women, and it will offer to the new service of medical women opportunities for professorial, tutorial, and research work which they could not obtain in private practice. The construction of the college will commence very shortly, and the committee of management will consist of three women and two men. Meanwhile medical women are being, and will be, largely consulted as to its organization, and it is proposed to appoint the lady principal a year before the college is opened in order that she may supervise the construction and superintend the arrangement of the fittings, equipment, and furniture.

I have said enough to show not only that India is in urgent need of the services of medical women, but that under the improved conditions it offers a splendid career to medical women of the right stamp.

I will not detain you, therefore, any longer, except to express the great pleasure it gives me that this scheme has materialized during my term of office as Director-General of the Indian Medical Service. Believe me, ladies, the members of the service which I represent are not hostile to the interests of medical women; on the contrary, we are your sincere well-wishers, and I feel very strongly that we have not deserved many of the bitter attacks which have been made upon us in recent years. India affords ample scope for physicians and surgeons of both sexes, whether they be officials or independent practitioners, and I trust that in the future the medical woman, now that all irksome restrictions are about to be removed, will cease to regard the civil surgeon as her natural enemy, and will learn to look upon him as an esteemed friend and colleague, and that in the days to come medical men and medical women practising in India will work in complete harmony to their mutual advantage and that of suffering humanity.

Owing to what is regarded as speculative prices now prevailing in the radium market, the magistrates at Munich have resolved to postpone the purchase of radium and mesothorium for which they had voted the sum of £10,000.

The course arranged by the Association d'Enseignement Médical des Hôpitaux de Paris will commence on Wednesday, October 15th, when Dr. Lucas-Championnière will give an address on ancient and modern operations for cerebral decompression. The course will continue until Friday, October 31st, and will include medical, surgical, and special subjects. Among those who are taking part in the course are Professor Broca, who will deliver two lectures on hereditary syphilis of bones and joints; Dr. Béclère, who will deal with radiology; Dr. Lesné, who will speak on alimentary anaphylaxis in children; Dr. Roubinovitch, who will give two lectures on epilepsy; Dr. Savariaud, who will deal with orthopaedics; and Dr. Thibierge, who will give several lectures on skin diseases.

THE PROBLEMS OF UNIVERSITY MEDICAL EDUCATION IN LONDON:

*TWO YEARS' EXPERIENCE OF CONCENTRATION.**

BY

WILLIAM HUNTER, M.D., F.R.C.P.,

DEAN OF THE CHARING CROSS HOSPITAL MEDICAL COLLEGE.

Two years ago the Charing Cross school adopted the policy of concentration of its earlier medical studies, transferring its students for this purpose to the King's College Laboratories of the University of London, immediately adjacent to the school. The time now elapsed has enabled one to form an opinion of the effect of this change on the character and work of the school and of the university laboratories.

Advantages.

It has had advantages to the students, to the school, and to the university laboratories. To the students in giving them access to the best scientific education which the University of London can at present give; to the school in freeing its laboratories (hitherto devoted to chemistry, physics and biology, physiology, and anatomy), its energies, and its finance, for the final portion of studies more immediately and legitimately connected with hospital work; and to the university laboratories in providing them, in our case, with a very considerable number of students, with corresponding increase of income, and a greater stimulus to their laboratory work and to their scientific teachers. The effect of the change in these three respects may be considered separately.

Number of Students.

As regards the number of students, there has been no falling off in the number either of earlier or final students. On the contrary, there has been a marked increase—from a total of 109 in the school in the year 1910–11 to an average of 150 for the past two years.

The total number of new students who have become connected with the school for the earlier and final studies, and for special studies connected with the final studies, has been no fewer than 140. The interesting feature is that 133 of these have taken the medical course, 23 of whom joined for the earlier studies, 41 for the final, and 69 for the special courses.

These students, like all other students of London, fall into two classes—full-time and part-time students. The net result has been a gratifying increase of full-time medical students now connected with the school, and a very striking increase in the number of part-time medical students, which rose from an average of 4 or 5 previously to 48 in the first year after the change, similar numbers have been retained during the past year.

Quality of Students.

As regards the quality of students, there has also been an interesting change. Instead of being half medical and half dental, the school is now practically entirely medical, only a few dental students remaining. Further, nearly one half of the full-time students entering the primary and final school are studying for the degree of the University of London; the standard of work has been good, with perhaps the highest record of honours which any school has probably ever shown in the same period of time. During the past two years the distinctions of the Gold Medal M.D. of the University of London, the Gold Medal M.B. of the University of London, the Murchison Scholarship in Clinical Medicine (open to young graduates of all schools of London and the University of Edinburgh), the gold medal with prize of £45 awarded by the Medico-Psychological Association, and, finally, the Rabbeth Scholarship of King's College Laboratories for the earlier studies for medical degrees of the University of London, have all been gained by students of the school.

The good spirit animating the school has also been evidenced even in the field of sports, where they have been able to fight through into the semi-final in spite of the handicap of their relative small numbers.

Changes in the School.

The changes effected have been of a very extensive and radical character. The school has been able during the past two years to greatly increase its accommodation for general pathology, bacteriology, public health, and sanitary science work. The large departments formerly devoted to earlier studies of chemistry, physics, biology, physiology, and anatomy have now been completely reorganized and adapted for the above final studies.

University Laboratories of Public Health and Bacteriology.

The increase in the number of students transferred into the university laboratories—in connexion with which two of the members of the Charing Cross staff (lecturers in anatomy and physiology) were taken over by the University of London, King's College—necessitated further room for the various classes for the physiological and other departments in the university laboratories. Later in the same year negotiations were therefore opened, and finally completed, by King's College with Charing Cross school with a view to transferring the bacteriological and public health departments of the college to the premises rendered vacant in the school by the transference of these earlier studies to King's College. These departments were eminently suitable by their character, proximity to King's College, central situation in London, and detachment from the hospital for university studies, affording greatly improved accommodation as well as space for considerable expansion. The cost of the structural alterations and fittings was met by the school, and under an agreement with the University of London, on behalf of its King's College, the transference of the bacteriological and public health departments of King's College was finally effected in October, 1912.

In order to assist the university laboratories the school, in addition to carrying out extensive alterations, has undertaken to make (out of the rent received for the use of these laboratories) a contribution of £250 a year towards its upkeep and maintenance, and in respect of the instruction in public health given to its students.

The laboratories were formally opened and handed over to the university authorities on behalf of the school by Professor Simon Flexner, the Director of the Rockefeller Institute, New York, on the occasion of his delivery of the biennial Huxley Lecture in October, 1912.

The accommodation provided comprises a large class laboratory, research laboratories, professors' laboratories and lecturers' laboratories, for each department of bacteriology and public health respectively, with a photomicrographic laboratory, preparation rooms, large theatre, and library for the joint use of the two departments.

Advantages of Concentration.

These arrangements have proved of mutual advantage alike to the University of London, King's College, and to the school. To the college it has proved of great service in not only providing greatly improved accommodation for its bacteriological and public health work, but also in setting free the laboratories vacated at King's College for the greatly needed increased accommodation of their physiology, psychology, and zoological departments.

To the university the change has also been recognized as being of great importance in connexion with the teaching of hygiene and public health, and forms the subject of a specially approving comment in the final report of the Royal Commission:

> We think all the university medical students might receive their instruction in these subjects of hygiene and public health wherever it is most convenient to provide for it. King's College has recently taken over the laboratories formerly used by Charing Cross Hospital Medical School, and has thus greatly improved its accommodation for research. We are not prepared to say that the subject of public health is adequately provided for at present in London, but we think adequate provision may be made by developing what now exists. The department should not be confined to the instruction necessary in the ordinary course of the medical curriculum. Instruction must be provided for the degree of M.D. in State Medicine, and, moreover, the subject is one in which there is great room for research in many directions.

To the school the advantages of the change have been that the whole school is now entirely adapted to final laboratory studies and research.

The pathological and bacteriological departments of the school are now provided with excellent laboratories—the laboratory of general pathology being capable of accommodating 100 to 150 workers. A reorganization of the department has been carried out, under which the work

* This report was presented at the opening of the winter session.

and duty of co-ordinating, of stimulating, and promoting research therein has been placed upon the Senior Lecturer as Director of Pathology. A new appointment of Research Fellow and Assistant Lecturer in Pathology in immediate charge of the pathological laboratory has been instituted, the first holder of this post being a former recent Carnegie Research Fellow in Pathology of the University of Glasgow, and arrangements have been made—when means shall permit—for two additional full-time appointments of demonstrators and research scholars.

The result of the concentration above described and of the developments connected therewith has been that it has been possible to expend a total of £1,500 on laboratory teaching, equipment, and research, and other final studies, as compared with the quite inadequate, almost negligible, amount which, owing to the cost of the earlier scientific studies, it was previously possible to expend.

The advantages, alike to the university, to King's College, and to the school, of the policy of concentration have thus been of an interesting and even striking character.

The question may be asked—as it has been asked—What have been its attendant disadvantages, either to the university, King's College, or to the school? I know of none.

The university and its King's College have, in my judgement, adopted a wide policy, capable of extension to other schools, of utilizing laboratories convenient for its purpose in its own schools wherever they can be found; and concentrating the professorial and teaching staff of individual departments of its scientific work wherever the situation of the laboratories is most convenient to its workers and students.

In the present case, as I understand, the effect on the University Public Health Departments which have been transferred, both as regards numbers and workers, prosperity and facilities for research, has been good. This has recently been recognized by the promotion to the rank of assistant professor and lecturer in the university of two of the teachers in these departments. The numbers attending the laboratories have increased from 69 in the year preceding the transference to 101 workers during the past year.

As regards the school, the fear often expressed that concentration of studies would interfere with the social life of the hospital and school—a matter to which so much importance has always been, and still is, rightly attached—has proved in our case to be quite groundless. The social life of the students, their interest in their Students' Union and its many spheres of activity, has never in the whole history of the school been greater or more intense. It has been shared equally by the earlier students as by our final students. As a matter of fact both secretaries of the Students' Union for the past two years have been students taking their earlier studies. At no time has the spirit of the school—in connexion with the functions of the students' union and the activity of its branches of athletics—been so well shown.

One fact connected with the recent changes, already noted, has been the reduction in the number of dental students. As already seen, this has been compensated by a still larger increase in the number of medical students. But, on the other hand, any disadvantage connected with this change is, in my opinion, compensated for by the increased number of students available for the two or three schools in London who are specially interested in dental education, and by the prosperity which the increased number of students has brought to them. In other words, the policy of concentration adopted in this school with many advantages, has thus produced a corresponding concentration of dental students in at least two other schools, with increased prosperity to them.

The principle of concentration is sound, but the principle of *local* concentration, of getting everything into one building, or in the case of clinical studies into one hospital, is not sound, because it would require such a total alteration of everything connected with hospital traditions, management, and work that it would not be received. The hospital system is not a difficulty if it can be utilized in accordance with the English traditions of clinical medicine.

As regards the provision of laboratories and facilities necessary to supplement the hospital clinical teaching in the case of the London schools, the laboratories are there, the equipment is partly there, and all that is wanted is for the university to come and take hold of them, to equip them, and place professors, assistants, and research workers in them wherever these laboratories are suitable for the individual departments of studies. University students, if given access to university departments in the different schools as they should be given, will always concentrate for work in these individual departments, irrespective of any feeling that they are going to the individual schools in which these laboratories may be situated.

The Problems of University Medical Education in London.

Medical education has been a welcome guest, and has had a free run in all the school hospitals from the very first. This is in striking contrast to the experience of medical teachers elsewhere—for example, in Berlin, the capital of Germany, where all the hospitals refused to allow students to make use of them, and early in its career (twenty-five to thirty years ago) the Government was, in consequence, compelled to build—at first for its own war purposes, but now maintained for university purposes—the great Charité Hospital of Berlin.

Still more in America up to the present time, the greatest difficulties have been put in the way of medical schools by the governors of hospitals refusing or limiting their permission for students to attend.

In return for their free use by the university, the hospital governors in London have never asked or received any material or other recognition from the university.

Comparison between English and German Systems.

This freedom of the hospitals throughout the whole history of English medicine forms the basis of the chief English clinical traditions of medical education. They were thus described before the Commission by Mr. Flexner:

> The conditions are much more favourable here from the point of view of the undergraduate student than anywhere on the Continent. The entrance to the wards is much easier. In Germany the student gets *almost altogether demonstrative teaching* during his undergraduate period. It is not till the close of his formal education that he is compelled to serve a clinical year in the hospital. (He is taught in a large lecture theatre every morning for an hour or an hour and a half, and then in batches of fifty or sixty he is taken round the wards for an hour twice a week.)
>
> [In England, on the other hand, he spends on an average four to six hours daily in the wards for a period of three years *before* he qualifies.]
>
> The opportunities for seeing sickness in the wards which you give the ordinary boy are so good—are so much better than he gets at most places—that that has itself become an obstruction to anything better. The clinical training is immensely better than it is in the ordinary medical school in America, and I think in some respects the conditions are *immensely more favourable* to the student than they are in Germany. The student in England can really use his material; he has almost as easy access to his patients as the physician has.

There seems to be nothing here materially wrong with English methods, and more particularly with the relations of hospitals to medical education. On the contrary, the relations between the university and the hospitals have been as friendly, elastic, and mutually helpful as they have always been between the hospitals and their medical schools. Moreover, these relations have been all-important in medical education in England—for without them medical education in England would never have been started in the first instance, and would even now be largely non-existent.

The Great Task of the London Schools in Medical Education.

How great the task of London medical education has been, and still is, is shown by figures and statistics which I placed before the Royal Commission. The medical schools of London, up to as recently as twenty years ago, were responsible for the entire medical education of no fewer than 70 per cent. of the total students of England, and for the part-time education of another 10 to 20 per cent.—that is to say, of no less than 80 to 90 per cent. of the students in England, this number constituting no less than 42 per cent. of the entire students of England and Scotland. Despite the formation of seven provincial universities during the past ten to fifteen years, it still has to educate, in whole or in part, over 70 per cent. of the total students in England, and over 40 per cent. of the total students of England and Scotland.

The medical schools of London have thus discharged in the past, and still continue to discharge, a big task for English medical education—and they have done this under great and increasing difficulties without endowment and without the slightest pecuniary support from the university whose students they educate.

Even if great difficulties exist—as they undoubtedly do in an almost overwhelming degree—as regards the working of the schools and the prosperity of the university which they so laboriously serve, it might be thought these difficulties did not extend to the relationships of the hospitals to the university or their willingness to serve the university.

What, then, is the chief problem presented by university medical education in London? It is represented to be the hospitals of London—their number, their intense interest in education, their multiple energies, the difficulty of reconciling their existence and their energies with the grafting on to them of another system of education and hospital control necessary, it is alleged, for the establishment of an ideal system of university medical education.

Educationalist View.

Mr. Abraham Flexner put the matter from the educationalist point of view as follows:

1. To put the teaching of medicine on a university basis, it is absolutely essential that the university should be in complete control of its own hospital. The purpose of the change is to elevate the general level and to make England a contributing factor to the progress of medicine, which now, except by individual accident, it is not.

2. The mistake is that the English schools have so long produced a good working type of physician that they have not stopped to ask: "Have we improved our clinical teaching to keep pace with the improvements the laboratories have placed at our disposal?" That, of course, they have signally failed to do.

3. I think, if you will ask the productive London physicians whether their productivity is in consequence of the English system of medical education or despite of it, they will tell you that it is quite in its despite—it does nothing for them. What is wanted is to make more prominent the educational aspect of the training.

4. Not only are the London hospitals disorganized when looked at as a whole, but they lack each of them internal reorganization.

You will at once have to begin to reorganize the hospital service, but that would be very easy, if you reorganized your Faculty. The reorganized Faculty will very soon reorganize your wards.

Here, then, is the picture of English medical education as it is drawn by a distinguished American educationalist (not a doctor). It is sharply outlined, and if the shadows are too deep in places and wrongly placed, his object is the highly laudable one, beneficial to education, of directing attention to the existence of the picture at all—not necessarily to its completeness or absolute technical accuracy. Personally, I feel that no one interested in the future of medical education and medical science can fail to be grateful for having had this picture of our English system of medical education put so clearly before us—not only in its higher lights of the special clinical advantages which our students enjoy, but also in its deeper darks of the incompleteness of the provision we make for laboratory work.

The problems facing university medical education in London, as here presented, are thus the following formidable ones:

1. To create, in the first place, a university which will be concerned and *financially able* to give any education at all to its students in their final hospital and school studies. For this the University of London has, so far, never done.

2. To create a *new Senate*, limited in number to ten or fifteen men, with the fullest financial, administrative, and executive control, over the whole affairs of the university.

3. To create a new *Faculty of Medicine*—small, compact, and sufficiently business-like in its methods to be able to draw up a scheme, after negotiations with one or more hospitals, and induce them to hand their hospitals over for university purposes.

4. As regards the hospital governors—the problem placed before them by the newly organized Senate will be to allow this university Faculty to modify their entire existing arrangements in some radical manner to suit university requirements—in short, to control the hospital—the hospital managers to continue, as before, to devise schemes for obtaining from the public all the money necessary to keep the hospital going.

5. There is a fourth problem—most clearly presented by Sir William Osler in his evidence before the Commission. He was asked:

> Supposing the hospital governors refuse to hand their hospital and its control over in the way suggested, what influence of a compulsory character could you bring to bear upon them? and the reply was: I do not know, sir.

National Characteristics in Medical Science.

National characteristics play an important part in medical science as they do in all other spheres of human activity. They have played an all-important part in the development of English medical education and medical observation.

In the case of English medicine that characteristic has been *individualism*, shown in connexion with the foundation alike of hospitals and schools, and no less manifested by the individual philanthropy which originally created and still underlies and supports the English hospital system.

In the case of Germany the national characteristic has, on the contrary, been essentially governmental and bureaucratic, all hospitals and medical faculties being supplied and maintained by combined State and municipal aid.

In America there has been exhibited individualism—rampant to a degree quite unknown in the history of any country—condoned, connived at, and even legalized by a degree of recognition and support on the part of individual States and municipalities totally unknown in the history of medicine in this or in any other country. No greater service has ever been rendered to American medicine than the full, clear, and remarkable exposure recently given by Mr. Abraham Flexner of the proprietary nature of scores of the medical colleges, "institutes," quasi-universities, "national medical universities," "colleges of physicians and surgeons," etc., which for many years have given their M.D. in a frankly commercial spirit. One of the offers made by one of these institutions having an attendance of 150 students is "free transportation from Chicago to Vienna by way of New York, London, Paris, to any graduate who has for three years or more paid regular fees in cash." This school, apparently owned by the "dean" and bearing the title of "National Medical University," has "no equipment of any sort, and a dirty, unused, and almost inaccessible room as its dissecting-room; and its 'hospital' consists of a top floor, containing two lonely patients." Despite these limitations it enjoyed the happy and considerable (estimated) annual income of £4,500.

The Carnegie Foundation for the Advancement of Teaching.

These conditions set out in Mr. Abraham Flexner's report (1910) in many of the 148 "medical schools" of the American States must have been, if possible, even worse some thirty years ago, when the Johns Hopkins Hospital and University were first conceived and founded.

It is a great biological fact, and new pathological law, that every "toxin" has the power of producing its own "antitoxin," powerful and effective in proportion to the virulence of the original infection. The history of medical education in the United States during the past twenty-five years has afforded a single proof of the correctness of this law in the realm of medical education. Great evils produce great antidotes.

The evil of medical education in America—namely, individualism and individual "schools" and "colleges" run rampant—has been signally checked, and is in process of being in due course effectively arrested by a still greater individualism originally created by the munificent foresight of one philanthropist, Johns Hopkins, and given effect to by the brilliant imagination and practical genius of a young pathologist, Professor Welch, to whom at the early age of 28 was entrusted the unique task of formulating the conditions and selecting the professors for the first Faculty of Medicine to govern the new "Johns Hopkins Hospital and University" of Baltimore. His first selection was a young Canadian physician professor, educated in the McGill University of Montreal and in London in the best clinical traditions of English medicine, transferred to the

University of Pennsylvania in Philadelphia, thence transferred to the Johns Hopkins University in Baltimore, and finally finding his present home in the ancient University of Oxford—Sir William Osler.

No more interesting chapter in the history of medical education—its aims, objects, and needs—has ever been written than that written by these two men during the past twenty-five years. Both of them are happily known personally to the students of the school—Professor Welch in the capacity of Huxley Memorial Lecturer to the school in 1902, and Sir William Osler when last year he fittingly occupied the chair when the Huxley Lecturer was one of his most distinguished pupils—Professor Simon Flexner, the Director of the Rockefeller Institute, New York.

I have recently elsewhere, in the opening address of the McGill University, Montreal, in 1910, paid my tribute to the influence of these two great teachers on the science of medical education. I said:

> Under their aspiring spirit and guiding hand, supported by their enthusiastic colleagues and pupils, Anglo-Saxon medicine on the American-Canadian Continent has shown itself capable of combining in a degree unknown to English medicine the scientific spirit underlying German work and methods with the more great clinical practical outlook which throughout its whole history has specially characterized English medicine.

That tribute paid three years ago, without any reference to the problem of medical education in London, has an interesting significance at the present time. For it practically embodies the *Leitmotiv*—the note of "fate and gloomy sorrow" which runs through the whole of the evidence of the Royal Commission on the University of London with regard to medical education—the *motif* which has eventually determined their final recommendations. That *motif* is the excellence of English clinical traditions in hospital work; and the extraordinary defectiveness, insufficiency, inadequacy, absence of organized support, whether from Governmental and public services, or by public opinion, or by private generosity, for the provision for laboratory work and research necessary for the promotion of medical education or the advancement of medical knowledge.

What, then, was the antidote which these pioneer workers introduced into medical education in the United States as they found it in the eighties, and as it still exists to a degree quite unknown in English medicine? It was the following: that Sir William Osler introduced the clinical traditions of clinical teaching—by the system of clerks and dressers in the wards and continuous relations with and observation of patients; while Professor Welch grafted on to that system the all-essential, supporting, educational, and progressive system of great laboratory institutes created on the lines of German methods and example. This was possible in their case, for they had a clean slate to write upon—a free hand both as regarded money for their hospital and school and as regarded the organization which they saw fit to adopt.

The proposals now submitted in evidence before the Royal Commission on University Medical Education in London and ultimately adopted and recommended by the Commission are shortly that similar organization is necessary to create the proper conditions for placing hospital education in London on a university basis.

Inasmuch as the chief basis of the whole system is the English clinical traditions of hospital education—the system of clerks and dressers and facilities for hospital work, and assistance always freely granted by hospital authorities in this country—is admitted by all to be immensely superior to the system obtaining in any other country, it might be thought to be perfectly easy and practicable to graft on to this system for university purposes the laboratories necessary to supplement and complete the system.

I think myself that that is perfectly practicable, and, the matter having now been referred to a strong Departmental Committee of the Board of Education to draft a bill to carry this into effect, so far as this portion of university education is concerned, I am quite prepared, in common with every one interested in placing university education on a sound basis in London, to afford them every help in my power. The character of the Departmental Committee is to my mind a sufficient guarantee that due weight will be attached to the distinctive national characteristics and honourable traditions of English medicine, which have been far more fruitful in advancing medical knowledge than some of the sweeping generalizations submitted by witnesses before the Commission realize.

Still more, I am satisfied that the widely different conditions of hospital management and support peculiar to this country and to institutions like the Johns Hopkins Hospital and a few other American hospitals and quite unknown to Germany—to wit, the voluntary public charitable support and government of the hospitals in this country, as contrasted with the Governmental or municipal autocratic and endowed support and government of the German and American hospitals and universities—will be better known to that Committee than they could possibly be to witnesses unacquainted by practical experience with their working, and more fully weighed by it.

To pour new wine into old bottles is proverbially a risky business which it is said no wise man would attempt. To pour a German full-bodied wine compounded of full control of the Minister of Education, exchequer control in connexion with insurance money, municipal control and autocratic directing control of one professor over the whole of a hospital and of all the laboratories connected with his subject, would certainly burst the old bottles (quite decent and useful ones) of the entire voluntary system of hospital support and government existing in this country.

To change the metaphor, as one witness, a physician and teacher—himself eagerly in favour of reform—graphically put it, it would undoubtedly "upset the whole apple-cart" of reform of university clinical medical education in London.

The problem is one of the greatest difficulty. So far from subjecting the Commission's report to criticism, with regard to the individual recommendations, my own opinion is, after the closest perusal of the whole volumes of evidence submitted, that a satisfactory solution of the problem of university reform in London, including that of medical education, is to be found in connexion with its fundamental recommendations, in my judgement admirable in character, relating to:

1. Government by the university court.
2. Financial administration and executive control by a compact and limited Senate of 17 business men (instead of an unworkable Senate of nearly 100 men representing independent and, in many cases, opposing interests).
3. The creation of a small, compact Faculty of Medicine, not merely advisory, but made responsible for the educational arrangements and provisions subject only to the control of the Senate so far as its regulations affect the finances of the university.

Financial Needs of Medical Education.

The needs of a school are determined by the requirements of full-time students, who are engaged in work in the school and hospital all day. Part-time students, who come for shorter periods of time, share in the arrangements thus provided to their own great advantage, and contribute to the support of the school.

To place medical education on a sound basis, the fees thus earned, *plus* any educational grants given by the Board of Education, should be entirely available for the education of the students, and for payment of lecturers and demonstrators.

1. On the basis of what is being done in German universities and a few of the schools in America, to which so much attention has been drawn as examples of what the standard of university education should be, these ought to constitute about one-third of the total annual cost of a student's medical education.

2. But this alone is quite inadequate. In addition there is required money for the provision, equipment, and support of the laboratories required for instruction, and for payment of the salaries of the professors in charge of the various departments. The amount required for this is about the same as that earned in fees.

3. And lastly, over and above these requirements there should be a third quotient connected with medical education, available for the promotion of research in the various departments.

I estimate, on the basis of practical experience, that the current annual expenditure for university medical education in London should work out to at least £70 to £80 a year per degree student, or approximately £80,000 to £100,000 a year. No provision approaching this is avail-

able in any of the medical schools of London. It means that two-thirds of the cost of education should come from sources other than fees. Owing to the absence of any adequate support from the State, university, or municipal, or any public sources no such funds are available.

The requirements here stated may seem to be large and costly even for a rich country like England. Nevertheless, they fall below the actual expenditure on medical education in the universities of Germany. According to official figures supplied by the German Government, the actual expenditure in ten universities in Germany amounts to no less than £95 per student, and a total sum of over £500,000 per annum.

For purposes of inquiry, I have thought it interesting to compare the expenditure in one of these universities—Königsberg (with 370 medical students)—with that of one of the largest London schools, taking 353 full-time students—in addition to 170 part-time students—a total of 523. The total expenditure in the German university is £34,000, as compared with £14,000 in the English medical school, and £92 per student, as compared with £40 in the English medical school. The amount of this total contributed by the State in the German university was £23,500—£63 per student—whereas in the English school the amount received from Board of Education grant was £4,600—£13 per student. The amount contributed out of the university chest is £29 out of £92 per student in the German university, whereas in the London school this source is non-existent.

The result thus is that in the German university more than two-thirds of the total cost (£92) is contributed by the State, whereas in the English school only one-third of the total (£40) is received from education grants.

I have also worked out the comparison in relation to departmental expenditure on corresponding subjects in the different class of studies. In the German university this amounts to £24,500, £14,000 of this being for clinical salaries, teaching, and work, and the English school is £6,000, of which £1,500 was available for clinical teaching. In other words, the departmental expenditure of a moderate-sized school in Germany is four times greater than the expenditure in one of the largest and most prosperous London schools educating 150 more students.

There is not much comforting in this contrast either to the English Government or English public opinion. In my opinion, the financial conditions of medical education in this country are a discredit to all parties concerned, except only the medical schools and their devoted band of teachers who support the whole cause of medical education in London on behalf of 70 per cent. of the total students of England, under the greatest difficulties, without financial support, without recognition, and without even sympathy.

If I might venture to make any criticism on the final report of the Royal Commission, which I am loth to do, having regard to the extraordinary labour which it has devoted to its great and difficult task, it would be that this financial aspect of medical education in London has not been brought out in connexion with the comparisons of a startling and invidious character between English and German medical education to which so much weight has been attached in the evidence placed before it and in its own final report.

The prosperity of university medical education in London would be enormously promoted by providing three to nine professors in certain selected schools of London, each of them with £4,000 at its disposal for the development of medical and surgical science and teaching in the university, as proposed by the Royal Commission.

The total sum of £36,000 a year thus provided for salaries and working expenses would not, however, solve the problem which it is sought to solve—salaries to full-time professors and their assistants, and the providing and maintaining and paying adequate scientific and final laboratories connected with the schools selected. It is little more than that referred to in the expenditure on one moderate-sized German university. And this is apart from any capital outlay necessary for the provision of new laboratories.

The current expenses of the Medical Faculty of the University of Berlin with Charité Hospital with 2,000 students is £183,000 a year, £98,000 of which is defrayed by the State, equal to £49 per student.

In addition, the capital expenditure on the Faculty during the twenty-five years 1887–1911 inclusive has amounted to £1,500,000.

The current expenses of ten medical schools in London with 1,122 full-time students, *plus* 765 part-time students, during the year 1911–12, was £52,500, of which £12,700 was defrayed by grants from the Board of Education, equal to £11 per full-time student. Allowing a similar grant per student for the 261 full-time students in the Medical Faculties of University and King's College (*plus* 252 part-time students), we get an additional figure of £2,870, or a total grant of about £16,000 for 1,383 full-time students (*plus* about 1,000 part-time students).

This represents a State contribution of about £12 per full-time student as compared with £49 in the Berlin University.

An Address
ON
THE PROVINCIAL SCHOOL OF MEDICINE AND THE PROVINCIAL UNIVERSITY.

DELIVERED AT THE PRIZE DISTRIBUTION IN THE SCHOOL OF MEDICINE, UNIVERSITY OF LEEDS,

BY

C. S. SHERRINGTON, M.D., F.R.C.P., F.R.S.,

HOLT PROFESSOR OF PHYSIOLOGY IN THE UNIVERSITY OF LIVERPOOL.

MR. VICE-CHANCELLOR, MR. DEAN, LADIES, AND GENTLEMEN,—The time-honoured custom that a guest on this annual occasion should address a few remarks to you deserves to be maintained. This it is which forms the chief justification for venturing to occupy your time for half an hour with words of mine. And as one stands in this fine room, well fitted for its purpose as a place where by dissection the fabric of the human frame can be thoroughly studied, one's thoughts turn naturally to the provision made and the opportunities given in such centres as Leeds for the student of medicine. Many of those now present in this room are students of medicine. They typify a class which I am glad to say has become larger than formerly in our country—the provincial student studying in the provincial university.

It is not always that the student, and especially the young student, plunged in the immediate occupation of his opening career, realizes the general bearings of the current of which he forms a part. Perhaps he will forgive me if, as a visitor from a distance, I attempt to put before him some of those features of his position which appear to me to be particularly interesting, and indeed important for him to bear in mind.

To do so I would recall—though this audience knows it in detail better than I do—the fact that the School of Medicine here is an old one, and a good deal older than the university itself. The student here is, therefore, a member of two corporations—of the School of Medicine and of the University of Leeds; and these two things are, happily, but one thing, this School of Medicine and the university being, in so far, one—a conjunction once a consummation devoutly to be wished, and now a consummation heartily to be congratulated on. And I would remind you that it is a consummation which was not reached without some trouble, without some of that toil, and self-sacrifice, and devotion, and enthusiastic service which all educational advances inevitably demand.

The young student may ask what to him is the actual advantage of this combination with the university and the enrolment of his school of medicine under the banner of the university. And some older student may reply, "You can be examined here and take your degree in medicine here without going to some distant and alien centre and wholly alien laboratories and wards, to face wholly strange wild beasts at Ephesus, and elsewhere, calling themselves examiners for external students." (Gentlemen, I can call them names for I have been one of them myself. I have seen "the sad face of Ruth amid the alien corn!") Now that reply of the friend to our young student questioner is quite cogent, yet it expresses but a small part of the whole advantage which the student reaps from his provincial university. Let me say here—though it is not really necessary—that in applying the term "provincial" to a university I find that it implies in

no degree any quality of inferiority, that though different from, it is in no sense less worthy than, "national" or "imperial." To me and to you provincial school and provincial university mean simply this, that the university and school are of their province and are proud to be of their province, and are proudest when they feel that they worthily represent their province. It is good both for the province and the country that features which characterize the province should be retained, that the seed sown in the province should flower and bear fruit characteristic of its soil. In that way we diversify and enrich the product of the country as a whole. I use the word "provincial," therefore, in no equivocal sense.

But to return to that question asked by the student as to his own gain from the association of his school with the university. To answer him duly I would turn for a minute to glance at the nature and history of medicine itself.

Two Aspects to Medicine.

I need not extol medicine to this assembly. Many of her votaries are here: I venture to count myself as one. At this moment it is upon her aspect as a system of knowledge to be taught and to be learnt that I would ask you to look. Am I wrong if in regard to this it rises saliently to me that from the educational standpoint medicine, like Janus of old, in a good sense, bears a double face? On the one hand she is an empiric. She learnt to cure by what the comparative psychologist calls the "method of trial and error"—conquests over sickness reached purely as the result of experience without help either from *a priori* or from inductive reasoning. And great and glorious is the record of her achievement on these lines. Of her humanitarian triumphs, certainly until a generation ago, the greater share was assignable to this part of her. The use of quinine in malaria, the remedial effects of various salts and metals, the discovery of chloroform and ether as anaesthetics—these and the names of a long line of famous physicians from the Renaissance down to some as justly famous and with us still to-day. These certify to the inestimable gifts that Medicine as empiric has given to suffering mankind. This face of Medicine well may wear a garland.

In her other aspect Medicine is not an empiric but a scientific intelligence. Bismarck, when a learned professor of history spoke in his presence of the science of State diplomacy, cut him short with the remark that State diplomacy is not a science at all but an art. But who shall refute the statement that medicine is both a science and an art? It has been written that woman is the last thing that man will ever civilize. So the scientific aspect, the male face of two-visaged Medicine, thinks sometimes of that female face, the empiric, with whom his lot is coupled. He feels sometimes that his other half is the last thing science will ever render wholly rational. By dint of patient toil he improves her practice, showing her a reason now and then. No sooner that than she is off on a fresh flight into the inexplicable, and he must cudgel his brains anew to find her a fresh logical position.

But even so, he feels that to step forward, though stumblingly, may have more philosophy of comfort in it than actually to arrive. Did not Stevenson write, "It is better to travel than to arrive"?

The feminine ever-youthful trait in medicine has for the student an undying charm. But on the whole the countenance of medicine has of recent years for the student become masculinely severe. The masculine head of medicine has indeed become the larger. Hydrocephalic even in appearance yet it is filled not with water but with reasoned facts. This development proceeds in the main from certain data acquired in the century just past. It has been the rise of chemistry and physics which have given new powers to medicine and sustained her in new flights. The chemistry of living matter has been brought fundamentally into line with the chemistry of the inanimate world. The chemical and physical machinery of the healthy body and of the sick body are beginning to be understood in principle and in detail. The knowledge so won is placing in the hands of the physician methods of diagnosis, and of prevention of disease and means remedial of disease undreamed of even a generation ago. Botany and zoology also are contributing facts of capital importance for counteracting disease.

Medicine and the Adjuvant Sciences.

Hence it has become indispensable for the student of medicine to preface his purely medical studies with work in the chemical, physical, and biological laboratories. Where can he do that so well as in the university laboratories fitted for those subjects on a scale which a school of medicine, apart from a university, can hardly at any time or anywhere hope to provide?

And beside these studies prefatory, as we may term them, to medicine, there are others which may be called intermediary, since intermediate between the former and medicine itself. These intermediary studies are also of the sisterhood of the Natural Sciences. Their needs and mode of teaching are also of the laboratory type. Historically, they may almost be said to have grown out of medicine, and they are still strongly linked to her.

If we follow the history of medicine onward from the Renaissance, we find her drawing help first from one, later from another, and later still from another of these sciences adjacent to her yet not wholly ancillary. The earliest and the most stable of these is anatomy. We are appropriately gathered together to-day in this the dissecting room. I mean that it is appropriate that we should be assembled in what is the laboratory of anatomy. Anatomy enables the physician to locate with his mind's eye diseases hidden in the depths of the body, and to locate is not rarely the first step towards alleviating. The surgeon is enabled by anatomy to direct his instrument, including the finest of all his instruments—his finger, through the living fabric, reaching the seat of mischief surely and economically of damage. Moreover anatomy, inasmuch as it studies the shape and form of organs, tells in many cases significantly of the purposes of those organs. This is especially the case where, as with muscles and bones and joints, the functions happen to be mainly mechanical. Hence it was that largely by anatomical study there was reached the first great biological discovery of the Renaissance—William Harvey's discovery of the circulation of the blood and of the meaning of the heart.

A later discovery, perhaps even greater in its consequences than that of the circulation of the blood, was also at its outset preponderantly anatomical, this time in the domain of microscopic anatomy. The discrimination of the cellular structure of all living things, a discovery revealing the living stones of which is built the house of life.

And before the advent of the cell theory biochemistry had begun. So intimately is chemistry bound up with all study of functional biology that the young physician, John Mayow, in his physiological experiments had so to say perforce discovered oxygen more than a century before its rediscovery by Priestley and Lavoisier. But in his day other knowledge was not yet ripe to take advantage of the observations which his early death cut short. It had not ripened until the stupendous work of Lavoisier had founded chemistry on the lines we know to-day. It was the coming of chemistry which made physiology in our sense possible. Thus it was that when the cell theory rose its doctrine was from the first both anatomical and physiological. It meant, among other meanings, that the chemistry of the body and of each one of the body's organs is a chemistry resultant from a hundred thousand tiny individual lives, partly dependent and partly independent seats of oxidation, reduction, polymerization, hydrolysis, and what not.

I will not dwell on physiology. I would only remark that its position among the sciences contributory and essential to medicine may be well indicated by briefly stating its scope. Its aim is to study the working of the living body from approximately the same standpoint as is taken by the engineer in studying his machines made by hands. It takes the organism as a material mechanism, and it traces in and through this animal machinery the flux of energy and material. The engineer studies his machines with a view to knowing not only how to use them to the best advantage but to repairing them when they break down, to devising new ones that shall be improvements on the construction of the old. The physiologist, in reverent study of the living machine, knows—no one so well as he—that he cannot construct another, still less improve on the construction of the old. He studies that he may, by knowing how the living machine runs, safeguard the body for its strenuous living purposes

and help it to be active and yet healthy. He hopes if it suffer damage or derangement to offer it conditions and opportunity to restore itself. For among the marvels of this living machinery are self-repair and growth. And physiology by long labour has reached a proficiency which enables her to demonstrate that the great principles of conservation and equivalence of energy shown valid for non-vital reactions, are confirmed also in the material machinery of life. Physiology has now in her technique reached a stage of analysis in which she successfully isolates in their full living activity main organs, even the beating heart of the mammal, and can so unravel their individual needs and powers from the complexity of the organism as a whole, and thus better understand the harmony of the organism as a whole. And another great problem before her is the relation of sense and motion to the nervous system, indeed, of mind in the widest sense. You may reply, "That last belongs to psychology." Yet how can physiology, with the nervous system a corporeal system before it, eschew its relations to sense and mind. To do so would be to leave part of her work untouched, and a highly practical part.

Our brief survey brings us to a third science, linked, if possible, even more closely still to medicine—pathology—so bound up with medicine as to be in many ways a part of it. A sister who keeps step with medicine up every ascent. What wonder that in recent years the progress and growth of pathology is as rapid and eventful as that of medicine herself? The methods of pathology are becoming every year more refined and delicate. In practice and in theory it is to-day one of the most rigorous of the biolcgical sciences. Besides of course elaborating its own technique, it compels to its service technical methods from a host of studies contemporary with or older than itself. It enlists means from histology, physiology, chemistry, physical chemistry, physics, with a completeness and success that certify the vigour and earnestness of its own discipline. It has borrowed much from botany and zoology, but it is not too much to say that it is contributing to those two sciences even more than it has borrowed. Pathology is opening out to these sciences almost as much as to physiology and medicine itself whole new fields of inquiry and purview. The laboratory of pathology is become to-day probably more than at any past time a nodal point within the medical school. Anatomy and physiology and chemistry lead to it; it itself can less be said to lead to than to lie alongside of medicine, and to be in absolute contact all along with the clinic. A student may—I fear often does—issue through his Second M.B. examination with all the anatomy and physiology he will ever possess; but all his life, so long as he is a conscientious student or practiser of medicine, he must be constantly renewing and extending his study of pathology. In my experience the greater number of all theses in the Faculty of Medicine to-day select some subject from pathology for their theme. The fact indicates that the serious student of medicine not only recognizes the practical importance of this study, but feels its fascination.

And there is yet another science which even the briefest category of studies adjuvant to medicine cannot omit, Pharmacology. A study which, so to say, pits the chemical powers of various agents obtainable from rock and plant and animal against the chemical powers of the living body itself. It analyses the influence of old crude remedies from the material of the world about us. It is tracing the relationship between chemical constitution and physiological and therapeutic action. It has succeeded in synthetizing some of the most useful therapeutic agents which the physician now has at command.

The Cost of Medical Science and its Claim on University Sources.

And it is with means drawn from these great adjuvant studies that the physician to-day visits the bedside. Of course he requires, over and above them, other resources as well, among them pre-eminently experience of the sick, knowledge of human nature and sympathy with it, and tact in the handling of it. But I think enough has been cited to make clear to us here the importance to medicine of its adjuvant sciences. Let us note that they are laboratory studies, involving laboratories suitably equipped, and an adequate allowance of time for each student to spend in them. And that they are expensive, costly both of time and money. Experts have to be found who can devote themselves heart and soul to the particular subject. The laboratories themselves have, in the modern school of medicine, to exist on a scale which as we know makes them a distinct feature of the modern world. The advance of medicine as a science, fruitful of benefit to the community as it is, lays on the community a burden of obligation. The community can hardly have a higher duty than to meet the material cost of such advance.

And the laboratories and their initial equipment are but the factory and the factory plant; both fail in their purpose if they halt for sustenance. And there the likeness to the factory fails. The factory once started can, if it be wanted, expect to pay its way. Not so the laboratory as a place of teaching and research. The instruction it gives must perforce be costly; books and lectures alone will not suffice; it has to be practical, and practical work in scientific biology is always expensive. And it has not only to distribute knowledge, but to manufacture more of it. To be an adequate school of instruction it must be a school of thought. It must deal not only with practice but with theory, and with theory at first hand. Theory, practical men sometimes say, is a goose. If a goose, it is yet the goose of the fairy tale which lays the golden eggs. The laboratory or the school that meets these just requirements cannot be expected unaided to pay back in cash the expenses it demands. It can do so only at the cost of those who come to learn, and that is to put its instruction beyond reach of all but the wealthier few.

How does a professional school gain by being a part of the provincial university—by being, in fact, a university school? The answer is clear. By being a part of the higher educational organization of the whole parent region its appeal for support gains access to a wider field of recognition and sympathy. It stands in a truer light to those generous minds for whom enhanced facilities for learning form an object to which they feel they can devote their influence and their affluence, if they possess that, quite devoid of all misgiving. It prefers appeal for subsidies from the whole public-spirited community itself. It should lose none of its own inner sources of material and spiritual support, and yet gain wider ones outside.

The Student of Medicine and University Life.

I need not stress how important for every student of the school of medicine is such increase of the school's endowment and annual subsidy and capacity as a place of learning. But I do not think that even such advantage is more important to him than yet another benefit that accrues from enrolment in the university. In a school of medicine which stands apart and separate, or virtually so, from the university, the students of the school often exhibit strikingly that admirable feature of associate life which a worthy institution gives—I mean, love of the old school; also that other healthy fraternal trait, *esprit de corps*, as it is termed. Yet in the school of medicine unassociated or associated only in name and not in fact with a university, the student is likely to miss a real and great advantage, a heightening of interest and mental outlook, which a school really incorporated in the university can always yield him. The university offers him, as the isolated school cannot, the great benefit of intercourse and commerce with students not only within but also outside his own particular professional calling or "*Fach*"; commerce on equal terms with men and women of his own age interested in, enthusiastic for, or bored by, other pursuits and other things than those which attract or bore the particular set engaged in his own professional pursuit. His university opens to him a world—a young world—wider than could his school of medicine of itself alone. His student life should be the richer for this opportunity. It forms a less monotone miniature of the world's life—not that I think that to the student of medicine his student life can ever seem wholly monotone or miniature. But it may seem so less than it really may be. I would therefore urge you as students in a university school of medicine to see, each one of you, that you enter thoroughly into the life of your university as a whole. See that your friendly circle embraces fellow-students of arts, of science, of law, of commerce, of technology, of all the faculties and schools your university includes. Let your fraternity embrace all classes gathered within the house of *alma mater*.

TWO UNUSUAL CASES OF LIVER ABSCESS.

BY

H. D. ROLLESTON, M.D., F.R.C.P.,

SENIOR PHYSICIAN, ST. GEORGE'S HOSPITAL; PHYSICIAN, VICTORIA HOSPITAL FOR CHILDREN.

Intrahepatic Suppuration due to Infection, conveyed by Exploratory Puncture, from a Right-sided Empyema.

In the following case intrahepatic suppuration was evidently due to infection, conveyed by means of exploratory puncture, from the empyema:

A groom, aged 25 years, admitted under my care at St. George's Hospital on April 23rd, 1913, had been taken ill fourteen days previously with a rigor and a dry cough, and had remained in bed since. Three days after the onset he began to cough up "phlegm," but had not had any haemoptysis. On April 21st he had acute pleuritic pain on the right side. On admission he presented the signs of a right pleural effusion; the liver did not come below the costal arch in the right nipple line. Under novocain an exploring needle was inserted in the sixth intercostal space in the axillary line and in the eighth intercostal space in the line of the inferior angle of the scapula, but no fluid was withdrawn from these two punctures. Next day the trocar of an aspirator was inserted into the eighth space in the line of the inferior angle of the scapula, and in the sixth space in the posterior axillary line, but only a small quantity of blood and serum was withdrawn. From the fifth space in the anterior axillary line about 1 oz. of thick pus was aspirated with difficulty; it contained a Gram-positive coccus. At 8 p.m. Mr. Fedden resected 1 in. of the eighth rib below the inferior angle of the right scapula, opened the pleura, and found solid lung; the wound was plugged. One inch of the sixth rib in the anterior axillary line was then resected, and about a pint of creamy, odourless pus was evacuated from the fissure between the upper and middle lobes. After this the temperature continued to oscillate between 103° and 97° F.; the pulse varied between 140 and 100, and the respirations between 44 and 24. It was obvious that there was retained pus although the discharge was free, but his condition rendered further operative interference undesirable. Death from sudden collapse occurred on May 6th.

The necropsy was performed by Dr. R. S. Trevor. The right pleural cavity contained two distinct abscess cavities of which one had been drained and the other had not been opened. The liver, which weighed 4 lb. 12 oz., was enlarged, and was adherent to the diaphragm. Over the anterior and diaphragmatic surface of the right lobe there was an area the size of the palm of the hand projecting from the surrounding liver tissue. It was obviously an area of suppuration, and showed a small puncture on a level with the fifth rib. Section revealed a large multilocular abscess, several of the loculi near the puncture being full of blood clot. The puncture opened directly into a space containing blood clot and pus.

It is important to realize the danger of causing intrahepatic suppuration in this way. The risk has not attracted much attention. Bryant[1] thought that a case of suppurative pylephlebitis in which the primary disease was an empyema rupturing into the lung was possibly due to exploratory punctures which had passed through the empyema into the liver, and thus infected the intrahepatic branches of the portal vein.

Small Latent Solitary Hepatic Abscess in an Infant.

In the following case the abscess was quite recent, and possibly formed during the last week of life:

A premature female twin, 10 weeks old, was admitted to the Victoria Hospital for Children, Chelsea, on October 26th, 1912, for wasting. Her weight, which had been 6 lb. two weeks before, was 4 lb. 6 oz. The infant had been breast-fed since birth, but had taken the feeds badly. Three other children, including the twin (who was doing well on borough council milk), were healthy. The infant had not been sick; the faeces were constipated and offensive. The abdomen was somewhat lax and retracted, but nothing abnormal was felt. The skin generally was inelastic. On careful feeding the infant gained weight, until, on March 28th, it scaled 9 lb. 1 oz. For the first two months the temperature was usually subnormal, but later on it was about normal; on a few occasions it ran up temporarily to 99° F. The pulse was usually about 120. There were a few intercurrent attacks of diarrhoea. On March 29th, 1913, the temperature shot up to 101°; the next day it reached 104°, the pulse being 150 and the respirations 42. The temperature remained at 104° until April 3rd, when it fell to 97.4°, going up to 102.8° shortly before death. On March 30th the skin showed a dark mottled rash.

The necropsy by Dr. W. J. Penfold showed 4 oz. of serum in the right pleura without any evidence of pleurisy, and bronchopneumonia of the lower lobe of the right lung. In the right lobe of the liver there was a loculated abscess the size of a pigeon's egg; the abscess abutted on the convexity of the liver, but did not cause any bulging or any marked perihepatitis. Microscopically the abscess was quite recent, and did not show any fibrous capsule. The pus contained streptococci but no tubercle bacilli. The vermiform appendix and all the other organs, except the liver and right lung, were healthy.

It does not appear certain that in this instance there was any direct association between the abscess and the appearances of bronchopneumonia and serous pleural effusion at the base of the right lung. It is said that hepatic abscess is more often latent in children than in adults, and that it may give rise to extra-hepatic manifestations only such as purulent pleurisy or peritonitis (Castaigne et Simon[2]). Legrand[3] collected 112 cases in children, of which 31 were dysenteric, 19 traumatic, 9 of doubtful origin, and 1 influenzal; the remainder were multiple and small. Apart from pylephlebitic abscesses, usually due to appendicitis, intrahepatic suppuration in children is very rare in this country.

REFERENCES.

[1] Bryant, J. H., *Guy's Hospital Reports*, London, 1900, liv, 77.
[2] Castaigne et Simon, *Pratique des mal. des enfants*, 1910, iii, 115.
[3] Legrand, *Arch. de méd. des enfants*, Par., 1906, ix, 129.

SPLENOMEGALY.

BY

SIR E. SINCLAIR STEVENSON, F.R.C.S.EDIN.,

BONDEBOSCH, SOUTH AFRICA.

UNTIL we know more about splenomegaly, I believe that resection of the spleen is the only chance we have to save a patient's life. Hitherto this disease has always been fatal, and no medical treatment has been of any value.

Osler has grouped under this head cases characterized by idiopathic enlargement of the spleen, with anaemia. Whether this is secondary to the splenic condition or otherwise, or both, or secondary to some other cause, is not known. Attention was first called to it in England in 1871; before this, splenic anaemia was regarded as the splenic form of Hodgkin's disease.

To a group of cases of enlarged spleen and cirrhosis of the liver accompanied by ascites the name of "Banti's disease" is given; it is, I believe, the last phase of splenic anaemia. The main symptoms are enlargement of the spleen and anaemia of a secondary type but without leucocytosis, with, in most cases, various haemorrhages and a downward course. The spleen is greatly enlarged; in some cases this enlargement seems to have preceded the anaemia; the lymphatic glands are not usually enlarged, the average of red blood corpuscles is below normal, the haemoglobin is relatively low, the leucocytes are diminished in number, but the differential count shows no special feature. There is often marked pigmentation of the skin, and as the disease advances so does asthenia.

Rolleston has summarized the above symptoms as follows: Anaemia of the type usually spoken of as chlorotic, namely, a diminution of red corpuscles with a diminished corpuscular value of haemoglobin; absence of leucocytosis, usually leucopoenia, considerable splenic enlargement which cannot be correlated with any other known causes such as leukaemia, tuberculosis, malaria, syphilis, and hepatic cirrhosis, the long duration of the disease, and the tendency to gastro-intestinal haemorrhages.

The diagnosis lies between splenic leukaemia, Hodgkin's disease with enlarged spleen, hepatic cirrhosis (alcoholic, syphilitic, or hypertrophic), and old cases of malaria with hypertrophy.

As to the cause of the disease, nothing is certain, and we must remain in doubt until more is found relative to the functions of that organ.

The spleen is classified in our works on physiology as a blood-forming organ, and the most important one. It is known that this function exists only during the prenatal period; at birth it apparently ceases, and other organs—namely, bone marrow and lymph cells—take up that work, or continue to manufacture blood, a function which they may have shared with the spleen during the fetal period. Since when the spleen is removed, in case of rupture or dislocation, no changes occur in the blood, we must admit that the spleen is not essential to life, and that its removal does not interfere with the health of the individual. A prevalent theory is that after birth its function alters, and that it takes a prominent part in consuming the broken-down blood cells.

When the spleen is removed in cases of splenomegaly the blood almost immediately improves in quality, and

this fact makes it appear that the origin of the disease is in the spleen, probably some toxin which destroys or injures the blood cells.

O. H., aged 22, a pale but well-nourished girl, with waxy skin, bloodless lips, had suffered attacks of epistaxis and gastro-enteritis for many years. Her mother stated that two years previous to her daughter's birth she suffered from symptoms due to S. P. infection, followed by two abortions. Up to the age of 9 the girl remained in comparative good health, and then began to suffer from recurrent attacks of vomiting, diarrhoea, and epistaxis. She consulted many medical men in England as well as here, who all found that her liver was enlarged.

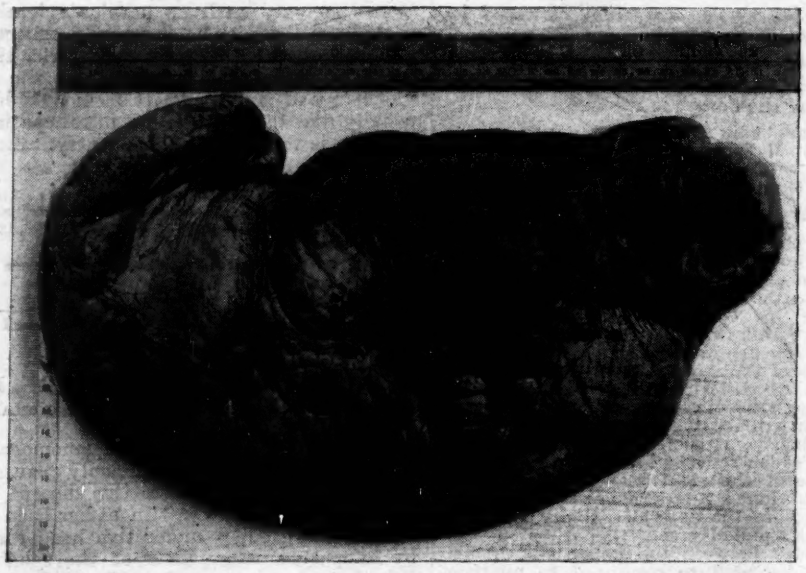

Fig. 1.—Photograph of spleen removed from a woman aged 24. In the fresh condition the spleen was over 15 in. (or 33½ cm.) in length. This photograph was taken after a considerable shrinkage had occurred in the fluid used for preservation. The dimensions at the time of photographing the organ may be observed from the scales. The black spot in the centre shows the position from which a specimen was punched out for microscopical examination. The weight of the spleen was about 6 lb., or 373 grams.

I saw her a year ago, she was then complaining of a feeling of weakness and breathlessness, but had no pain; there was an anaemic cardiac murmur; the catamenia were scanty, the liver could be felt protruding for 2 in. below the ribs, extending towards the middle line, joining there with a large mass filling the left flank and side down to ½ in. of the umbilicus; this enlargement was smooth, hard, and fixed. She was given iron and arsenic for some months with much benefit. When seen again, ten months later, during which time she had been working in a dressmaking establishment, her symptoms were much accentuated; she was very pale, exhausted, but had no actual pain beyond a feeling of fullness; there was no pigmentation of the skin, the liver remained much enlarged, the spleen had considerably increased in size, reaching down into the pelvis 3 in. below the navel.

A blood examination by Dr. de Korte on December 13th, 1911, showed: Red corpuscules, 1,500,000 per c.mm.; white, 4,568 per c.mm.; haemoglobin, 83 per cent. Percentage composition of white cells: Polynuclear leucocytes, 61.5 per cent.; lymphocytes (chiefly small), 27 per cent.; Eosinophile leucocytes, 1.5 per cent.

There was a deficiency of about 3 millions of red cells; the leucocytes were diminished to half their number, though the relative percentage was not disturbed. The percentage of haemoglobin was reduced but not so markedly as would be expected from the numerical reduction of the erythrocytes, which raised the suspicion that the oligocythaemia was more apparent than real and due to a watery condition of the blood.

Operation.

An incision was made through the left rectus, from the lower rib down to 2 in. below the umbilicus; no adhesions were found; the spleen, which was covered with a very thin omentum, was enormously enlarged, reaching low down in the pelvis. The lower pole was delivered with difficulty; this allowed a partial tilting of the organ, exposing the lower part of the hilum; to do more than that at this stage seemed risky. The gastro-splenic omentum was very short, leaving little room between the stomach and spleen, so that any attempt at tilting the spleen to enable the suturing of the vessels stretched them in a perilous manner. To clamp them *en masse*, as done sometimes, was an impossibility; they were very large, and, owing to the length of the hilum, were spread out like a fan in close contact to the surface of the spleen. Each vessel, from below upwards, was tied between two forcipressure; two of them slipped their ligature, causing some anxious moments. The gastro-splenic omentum was then carefully divided by sections, taking special care not to wound the fundus of the stomach or interfering with the vasa brevia. When this was done, and only then, the upper pole was drawn down from under the ribs; the last part was folded upon itself to the extent of 2 in. Within a few minutes of its removal the spleen had drained

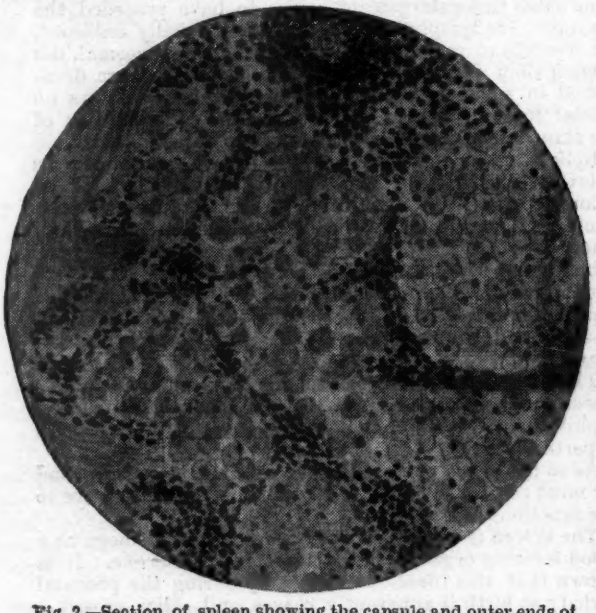

Fig. 2.—Section of spleen showing the capsule and outer ends of two trabeculae to the left. The rest of the field shows the structure of the spleen, with, at the upper margin, a Malpighian corpuscle in process of disintegration with a completely occluded artery in the centre. Magnification 100 diameters. Stained with polychromic methylene blue, and counter-stained with orange-tannin and acid fuchsin.

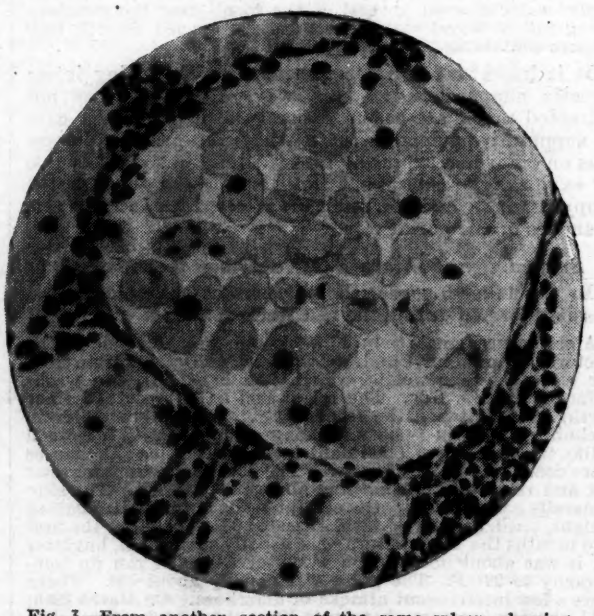

Fig. 3.—From another section of the same spleen, showing lobules with faintly stained cells, the nuclei of which become progressively less capable of staining towards the interior of the spleen. In Fig. 2 it will be noticed that nuclei are visible in nearly all the cells. Magnification 380 diameters. Stained with polychromic methylene blue, and counter-stained with acid fuchsin-tannin.

itself; the vessels which looked like cords appeared now like tags of wet tissue paper, and the size of the organ had dwindled to two-thirds; four days later it had further diminished to half its breadth and length.

After-History.

The patient recovered rapidly from shock. Three days after it was noticed that her appearance had much improved; the face had lost its waxy appearance, the cheeks were less pale, the lips had some colour, and the pulse had improved. On the tenth day the temperature, which had been normal, rose to 100°, and we found that one stitch had suppurated. On the fifteenth day there appeared some pigmentation on the brows, forehead, and round the mouth; 6 min. of adrenalin solution three times a day was given with apparent good results, for the stain lessened in depth.

An examination of the blood analysis twelve days after the operation, by Dr. de Korte, gave the following results: Red corpuscles, 4,400,000 per c.mm.; white, 11,200 per c.mm.; haemoglobin, 83 per cent. Percentage composition of white corpuscles: Polynuclear leucocytes, 83 per cent.; lymphocytes (chiefly transitional), 15.5 per cent.; eosinophile leucocytes, 1.5 per cent.

Dr. de Korte's observations on these results were as follows: The relative increase of polynuclear leucocytes is most probably due to the presence of some stitch abscess. It is as well to remember that the increase of red cells may also be more apparent than real, for a diminution in the serous plethora would account for the increase.

Careful examination showed no sign of micro-organism infection.

I desire to express my gratitude to Mr. W. D. Severn for his beautiful pathological illustrations, and to Dr. de Korte for his report on the condition of the blood.

REPORT ON TWO HUNDRED CASES OF RINGWORM TREATED BY X RAYS.

By F. EMRYS-JONES, B.A.Cantab., L.M.S.S.A.,

RADIOGRAPHER (CONJOINT) TO THE GENERAL HOSPITAL, BIRMINGHAM; LATE X-RAY SPECIALIST TO THE COVENTRY BOARD SCHOOL POLYCLINIC FOR TREATMENT OF RINGWORM.

During the past five or six years cases of ringworm have been treated at the General Hospital, Birmingham, by means of the *x* rays under the control or supervision of Dr. Hall-Edwards or myself, but it is only during the last three years that the single-dose method has been used. The apparatus used consists of a 12 in. coil with a dipper brake and tachimeter for regulating the number of interruptions. This is in circuit, with an automatic cut-out switch. By this means a definite number of interruptions can be given. There are also arrangements for measuring accurately the voltage and ampèrage passing through the primary, the milliampèrage through the tube, alternative spark gap, and a Sabouraud pastille, which is bleached in the sun and used four or five times, is used for each application.

With this apparatus the average time for treatment of a single patch varies between five and eight minutes. The advantage of the automatic switch is that one can leave the apparatus for a time knowing that there is no danger of an over-exposure. The patients are treated inside a cubicle, the operator being outside. The cubicle is made of two thicknesses of wood, sheet lead $\frac{1}{16}$ in. thick being interposed. The operator can watch the patient through a lead-glass window. As regards tubes, small light anode tubes are used, being contained in a stand fitted with a lead-glass shield, which is movable in any direction.

The statistics of the last two years (August 4th, 1911, to August 4th, 1913) are as follows: The number of patients treated was 200. Of this number 93 were infected over the whole scalp; in the remainder the scalp was only partially infected, and required from one to four applications. I have been careful to find out the number of patients who had to be re-exposed to the rays, the reason for second applications being: (1) Nervousness on the part of the patients, and their inability to keep still; (2) lack of suitable tubes owing to an excess of patients; this, unfortunately, in hospital work is no uncommon thing; (3) small infected areas which have not become epilated owing either to movement on the part of the patient or to the tube not being quite central in the holder, as tubes vary in size, and some do not fit the holder.

From all these causes 26 had to be treated a second time, this being the number out of a total of 630 applications. The majority required one more application to a small area, which was given through a small lead-glass adaptor. In the 93 cases infected over the whole scalp Keinbock's method was almost entirely used, five applications being given—one to the top of the head, one to the vertex, one to the back of the head, and one to each side. The usual practice was to give two or three applications each morning, and the remainder in about a week. The average time in which epilation took place was two weeks and five days. The usual time for the hair to recommence to grow was about seven weeks. In one case the hair was not fully grown for six months. In another, owing to two patients having identical names, one side of one patient's head received practically a double pastille dose. It is interesting to note that the hair returned quite healthy, although a considerable time afterwards.

To the best of my knowledge there has not been a single case of *x*-ray burn or of permanent alopecia, and one must conclude that parents would naturally report to us if such had not been the case.

By far the greater number of patients had been having treatment with ointments and lotions, some even for years. I consider the treatment with *x* rays quite the best, and certainly the quickest, especially for well-established and extensive cases. With proper apparatus, and in expert hands, it is perfectly safe. It is encouraging to note that several school clinics are supplied with *x*-ray apparatus, which is reported to be doing good work.

It is very difficult to work out the exact cost for each patient, but it is not excessive when a large number of patients are dealt with, and, even if it is in excess of ordinary treatment, the great saving in time fully justifies it.

PRELIMINARY NOTE ON BED-BUGS AND LEPROSY.

By DAVID THOMSON, M.B., Ch.B.Edin.,

CLINICAL AND PATHOLOGICAL RESEARCH ASSISTANT, SCHOOL OF TROPICAL MEDICINE, LIVERPOOL.

Two articles appeared simultaneously, one by Sandes and the other by Long, in the British Medical Journal, 1911, vol. ii, pp. 469 and 470, in which it was stated that a considerable percentage of the bed-bugs experimentally fed on lepers were found to contain the leprosy bacilli. Furthermore, a large percentage of the bed-bugs caught within the dwellings of lepers contained acid-fast bacilli, presumably the bacilli of leprosy, while those caught in the dwellings of healthy people contained none. The presumption was that bed-bugs might play an important part in the transmission of this disease. Since these announcements nothing further, so far as I can ascertain, has been published on this subject. In 1911 I attempted to confirm these observations by feeding a number of bed-bugs on two cases of leprosy in the Royal Southern Hospital, Liverpool, in Sir Ronald Ross's clinic. One was a case of the maculo-anaesthetic type, the other was of the nodular variety. Seventeen bugs were fed directly on the nodules of the latter case, and four on the patches of the former. They were killed and examined from two to ten days afterwards for acid-fast bacilli, but none could be found; numerous control bugs were examined, with similar negative results. I was unable to make any further investigations on the subject until 1912. I spent the last three months of that year in Panama, and had ample material at hand for continuing the work. In the leper asylum at Palo-seco I fed 84 bed-bugs on various cases of leprosy, acute and chronic, but was unable to find any trace of acid-fast bacilli in these insects afterwards. Seventeen bed-bugs were caught in the beds of the patients at Palo-seco, and I obtained eighteen more caught on the mattresses of the beds in the leper asylum at Trinidad. All of these likewise showed no trace of acid-fast bacilli. A total of 105 bugs fed on lepers and 35 caught in the beds of lepers, therefore, gave no evidence that these insects harbour or transmit the disease. A further total of 107 bed-bugs were examined as controls; 21 of these were caught in dwellings in Liverpool, the remainder were caught in the Spanish wards in Ancon Hospital in Panama. The controls also gave negative results. The Ziehl-Neelsen stain was used throughout. Full details of this investigation, in addition to other researches on the transmission of disease by bed-bugs, will be published later in the *Annals of Tropical Medicine and Parasitology*.

EIGHTY-FIRST ANNUAL MEETING

OF THE

British Medical Association.

Held in Brighton on July 23rd, 24th, and 25th.

PROCEEDINGS OF SECTIONS.

SECTION OF MEDICINE.

E. Hobhouse, M.A., M.D.Oxon., F.R.C.P.Lond., President.

DISCUSSION ON NON-DIABETIC GLYCOSURIA.

OPENING PAPER.

By A. E. Garrod, M.D., F.R.C.P., F.R.S.,

Physician to St. Bartholomew's Hospital; Consulting Physician to the Hospital for Sick Children, Great Ormond Street.

No one has yet succeeded in formulating a definition of diabetes which will pass muster, and, failing such a definition, it obviously is impossible to draw any sharp line of demarcation between diabetic and non-diabetic glycosuria.

For most of us the term "diabetes" connotes several distinct ideas: First, persistence of glycosuria throughout the remainder of the lifetime of the patient. Secondly, fatality, for a diagnosis of diabetes is usually held to imply a fatal result sooner or later. Thirdly, the name calls to mind a group of associated symptoms—polyuria, thirst, wasting, and local lesions, such as boils, cataract, and gangrene. This syndrome was recognized and received its familiar name centuries before the excretion of sugar in the urine was known to be one of its component factors. Lastly, when we think of diabetes we picture a profound disturbance of carbohydrate metabolism, for which no underlying cause is apparent, no primary lesion of which it may be regarded as a secondary effect.

Yet no one of these conceptions provides a satisfactory basis for a definition. We have no right to assume that recovery from diabetes cannot occur, and there are good grounds for the belief that some patients, whose malady conforms in all other respects to the clinical picture of diabetes, do actually recover. Again, a diabetic patient may exhibit over a long period none of the associated symptoms which have been mentioned, as witness the so frequent detection of the disease in individuals who apply for life insurance believing themselves to be in perfect health. Nor does the diabetes which has its origin in definite visceral lesions—as, for example, of the pancreas or thyroid gland—differ in any essential respect from that for which no explanation is forthcoming. Lastly, if we take as our criterion failure to dispose of glucose in the normal way, with the result that it accumulates in the blood and is excreted in the urine, we shall find that very few varieties of glycosuria can be excluded from the diabetic group.

Of the various definitions of diabetes hitherto proposed that of Naunyn is, perhaps, least open to objection—namely, that whereas any man will excrete sugar if he take a sufficiently large dose of glucose upon an empty stomach, only a diabetic subject will exhibit glycosuria after any dose of starch which it is possible to administer. Yet even this distinction is quantitative rather than qualitative.

However, we are not met together to-day to discuss definitions or obscure questions of chemical pathology, but as practical medical men who are seeking to arrive at some means of estimating the clinical import of glycosuria as a symptom, and of judging which of the cases in which this symptom occurs have not the sinister outlook which has become associated with the term "diabetes"; in other words, to obtain, by comparison of our several experiences, aid in prognosis and guidance in treatment.

This being so, it will be well to adopt, for the purpose of this discussion, a classification based upon clinical data, and to consider various forms of glycosuria which differ, in one respect or another, from diabetes as we conceive of it. Some will be included in the non-diabetic category because they are transient or intermittent; others because the excretion of sugar occurs as a symptom in the course of some recognized malady; or again because it results from the administration of a drug or toxic substance. Nevertheless it must be granted that although such a classification is justified by its convenience and utility it is of necessity very imperfect, and falls far short of the requirements of exact science.

The testing of urine by boiling it with Fehling's solution has long formed part of the routine of clinical practice, but, as every one knows, the mere fact that reduction occurs when this test is applied affords no proof of the presence of glucose, nor indeed of any member of the group of sugars.

Yet, in the immense majority of instances, conspicuous reduction does indicate glycosuria. In cases in which a green opacity develops, either on boiling or as the liquid cools, sugar may be, and often is, present in small amount, and other tests, such as that with phenylhydrazin or polarimetry, should be applied in confirmation.

There are constituents of normal urine which have some reducing power, such as uric acid and creatinin. Salicyluric acid, too, may mislead. Alkaptonuria, the remarkable metabolic anomaly in which there is excreted in the urine an aromatic acid which far surpasses glucose in reducing power, is readily recognized by other properties of the urine, and is of such rarity that, in all probability, few of us have met with a case.

Glycuronic acid, another powerful reducing agent, is excreted in combination with various drugs and toxic substances. Although it is closely related to glucose its presence has a wholly different significance, indicating, as it does, the calling into play of a chemical protective mechanism.

Even a sugar present in urine is not of necessity glucose. The commonest and most familiar example of a mellituria which is not glycosuria is the excretion of lactose by nursing women, and sometimes by infants who, as the result of a digestive disturbance, are not able to deal adequately with the lactose contained in their food.

Far more rarely laevulose is excreted, either alone or in quantity out of all proportion to that of the glucose which accompanies it. These cases constitute a group, or rather two groups, apart, and stand in no obvious relationship to diabetes.

Lastly, in the condition known as pentosuria, of which a number of cases have been investigated, but none as yet in this country, the reducing agent is a sugar indeed, but a pentose, and not a hexose such as glucose and laevulose are. This sugar, arabinose, is almost always in the optically inactive racemic form, is not fermented by yeast, and may be recognized by special tests, and by the far lower melting point of its osazone.

It is obvious that in every case in which there can be doubt we must make sure that we have to do with glucose before submitting our patient to a régime which is of necessity irksome and, if not called for, actually harmful in the long run. In order to do this we should ascertain that the reducing substance is a dextro-rotatory, fermentable sugar, and yields an osazone which melts at about 200° C.

Leaving on one side all such false glycosurias as have been referred to, let us now turn to the consideration of those varieties of true glycosuria which may, on one ground or another, be classed as non-diabetic.

Of such I will speak first of a kind of glycosuria which has acquired a small literature of its own, almost wholly German, and which has received hardly any attention in this country. It may be that it is not so rare as the scantiness of records would suggest. It is most accurately described as glycosuria without hyperglycaemia, but is usually spoken of, somewhat prematurely, as renal diabetes.

In the cases which conform to this type the quantity of glucose excreted is small—some 3 to 10 grams per diem, the percentage of sugar in the blood is below normal or normal, and is not increased by the administration of glucose by the mouth. The glycosuria is not influenced by diet. I have had a case of this kind under observation for six years past, in which, although there has been little restriction of carbohydrate foods, the daily output of glucose has remained constant at some 3 to 5 grams per

diem, and the blood sugar is below the normal percentage. Save that the effect of glucose administration upon the percentage in the blood has not been investigated, there is quite sufficient evidence for the inclusion of the case in the group under discussion.

It is difficult to suppose that in such cases we have to do with any serious disturbance of carbohydrate metabolism, and it is suggested that, as in phloridzin glycosuria, the power of the kidneys to retain in the blood its normal sugar content is impaired. Hence the name "renal diabetes." The failure to retain sugar might be due to a functional disorder of the kidneys, or equally well to the presence in the circulation of a toxic substance with similar properties to those of phloridzin.

However, there are facts which may give us pause in adopting such an explanation, and, as von Noorden has pointed out, the excretion of sugar may be but little influenced by diet in the early stages of ordinary diabetes.

I have under my care at the present time a girl of 10 years, whose case bears a close resemblance to those of the so-called renal class. The sugar of her blood is of less than normal amount; diet has no obvious effect upon her glycosuria, and glucose to the amount of 25 grams did not increase the output of sugar, which is now no greater than it was two years ago. There is no acetonuria, and the child enjoys excellent health and spirits. The course of the case is wholly unlike that usually followed by diabetes in children, but it is a highly significant fact that her brother, two years her senior, has orthodox diabetes, excretes much more sugar, and has more than twice the normal percentage of glucose in his blood.

Taking all things into consideration, it seems to me that we shall be wise to await an increased knowledge of the clinical course and ultimate outcome of such cases before we commit ourselves too deeply to a non-diabetic view of their pathology. It should be mentioned that in some of the cases classed as examples of renal diabetes there has been obvious disease of the kidneys, but in others there has been no reason to doubt their structural integrity.

The cases in which sugar is excreted in the urine, either during a short period or intermittently, are not very rare, but they differ widely in their nature and significance. Not a few middle-aged persons pass sugar only occasionally, although they practise no restriction of their dietary, Such glycosuria is apt to be regarded too lightly, and to be described as gouty. Nor would one deprecate the use of such euphemistic designations, in view of the evil repute of the name diabetes, and the importance of conveying to the patient the unquestionable truth that the existence of such glycosuria is consistent with many years of active and useful life. Nevertheless, on scientific grounds, many such cases cannot be excluded from the diabetic group. These patients are for the most part individuals with low carbohydrate tolerance, but whose tolerance is such that it is not overtaxed save by a meal exceptionally rich in sweet and starchy foods. If their tolerance be often overstrained, it tends to be still further lowered, but with so slight a restriction of carbohydrate intake as is scarcely irksome they may remain free from glycosuria over long periods. Such individuals conform to Naunyn's definition of diabetic subjects, in that they excrete sugar when they take large doses of starch, and their glycosuria is temporary and intermittent only in so far as the provocation is only occasional.

In cases of truly temporary glycosuria, on the other hand, the recovery of tolerance between the glycosuric periods is complete, as in a case from my wards recently described by Mackenzie Wallis and Roper.

It was that of a youth who was admitted on account of polyuria, which developed after an attack of "Java fever." He excreted sugar on several occasions at short intervals, whereas between times his tolerance of glucose was found to be normal, and 100 grams of glucose caused no increase of the sugar content of his blood. This is a much more rare phenomenon, but occasional finds on isolated days have led me to believe that daily observations on large numbers of cases might reveal the occasional presence of sugar in the urine more often than might be expected.

The whole subject of temporary glycosuria calls for much further investigation.

The question whether recovery from diabetes ever occurs is a very difficult one to answer. Not a few patients tell us that they have suffered from diabetes at some former period but that the tendency to glycosuria has long ceased, although they have abandoned all special restrictions of diet; but we seldom have the opportunity of studying such a case under both its aspects, and when we have such an opportunity the outcome of our observations may still leave us in doubt. I have had under observation for more than three years past a man of whose case I have given an account elsewhere. He was originally admitted to hospital with jaundice and glycosuria, excreting some 40 grams of sugar in the twenty-four hours. The jaundice quickly disappeared, but the glycosuria persisted, although in much diminished degree, in spite of a diet gradually reduced to strictness. Shortly after the man left the ward the sugar disappeared from his urine; he was able to take starch and even sweet foods freely, and even a dose of 100 grams of glucose caused no glycosuria. One was tempted to diagnose the case as one of catarrhal pancreatitis, which Mr. Mayo Robson believes to be a common cause of catarrhal jaundice, and as an example of complete recovery from diabetes. Now after the lapse of three and a half years the patient's general condition remains quite satisfactory. The urine has been examined at intervals ever since, and as a rule is quite free from sugar; but on two occasions, a year apart, traces of sugar, proved to be glucose, were found in specimens passed about two hours after dinner, but not in other specimens passed on the same day. That there is not always sugar in his urine at the time of day referred to has been proved by many examinations of other samples passed at that hour.

This case shows how essential it is that the observations should be extended over a long period before we can safely assert that a diabetic patient has recovered completely, and suggests that just as a damaged heart, of which the compensation has once broken down, is liable to fail again on comparatively slight provocation, so also, when the metabolism of carbohydrates has once been deranged its recovery, although apparently complete, is apt to fall short of absolute completeness.

For lack of sufficiently long after-observation many recorded cases of recovery from diabetes are ruled out of court, and only of recent years has the recovery of glucose tolerance, which is an essential factor in recovery, been adequately tested.

When we search the literature for cases in which adequate observations have been carried out both during the glycosuric and sugar-free periods we find that these are very few in number. I may refer to two cases which are specially important on account of the length of time during which the patients were under observation. Richard Schmidt found no less than 5.8 per cent. of glucose in the urine of a child of a diabetic mother during an attack of "gastric fever." The little girl's urine had been frequently tested, and had contained no sugar a short time before. The glycosuria ceased after seventeen days on strict diet, and never returned during twenty years of observation on an unrestricted diet. It may be objected that this case should be placed in the symptomatic and non-diabetic group, but a case recorded by Teschemacher is not open to this criticism. It is that of a man, past middle life, who for six months at least excreted sugar in his urine, and was regarded as a subject of mild diabetes. After the glycosuria had ceased the patient was under observation for ten years, during which he developed chronic renal disease, but never again excreted sugar.

From a clinical standpoint it appears justifiable to class as non-diabetic those varieties of glycosuria which are sometimes met with as temporary events in the course of acute diseases, such as pneumonia, scarlatina, and secondary syphilis, and in association with phlegmonous inflammations.

It may be that in such conditions the excretion of sugar is due to implication of the pancreas, and, if so, is of the same essential nature as true diabetes. The only disease of the class under discussion in which a pancreatitis is a recognized event is mumps, and in a few recorded instances a transitory glycosuria has accompanied the symptoms of such pancreatitis.

The progress of research is tending to strengthen the belief that an internal secretion of the pancreas, or, to speak more exactly, of the islands of Langerhans, which may be regarded as the component fragments of a ductless gland scattered throughout the tissues of the pancreas,

is the dominant, if not the sole, controller of carbohydrate metabolism, and that, with few exceptions, all varieties of glycosuria are, in a sense, of pancreatic origin. Although in no small proportion of cases of diabetes the tissues of the pancreas show no change visible to the naked eye, nor even to be detected by the aid of the microscope, it is probable that its internal secretion is subject to control by influences working from a distance, and emanating from other glands of internal secretion.

The diagnosis of lesions of the pancreas presents so much difficulty that our clinical knowledge of its diseases is almost confined to such as are grave and usually fatal. Carcinoma of the head of the gland presents features sufficiently characteristic to facilitate a diagnosis, but acute pancreatitis is still unrecognized during the life of the patient in the larger proportion of cases.

That the pancreas is subject to minor ailments, such as affect the more accessible salivary glands, can hardly be doubted, and we may hope that improved diagnostic methods will enable us to trace in such lesions the cause of a transitory glycosuria in many cases such as are nowadays wholly obscure in their origin.

Glycosuria is very far from being a constant symptom of disease of the pancreas. A comparatively slight damage, such as a diffuse fibrosis of a certain type, may give rise to a grave form of diabetes, whereas in a case in which, at the autopsy, the pancreas appears to be wholly converted into a mass of necrosed tissue no sugar may have appeared in the urine during life. We must conclude that in such cases some portion of the insular structures has escaped destruction. Again, a man whose pancreas has been replaced by a mass of fat, as the result of blockage of the duct by calculi, has been known to exhibit steatorrhoea for years, but no glycosuria.

Pancreatic diabetes, as we know it, is persistent and fatal because the damage to the gland upon which it depends is irreparable, but we may well imagine that a passing catarrh which leaves the gland unhurt after its passage may produce a benign and transitory pancreatic glycosuria.

Mr. Mayo Robson has described cases in which a timely surgical operation has been followed by a disappearance of pancreatic glycosuria, and it will be interesting to know, after some years have elapsed, whether the recovery will prove to be permanent.

From a purely clinical standpoint glycosuria due to a lesion of the pancreas may claim a place in the symtomatic class, but one would hardly be justified in calling it non-diabetic, so artificial is any distinction which we may choose to draw.

Evidence is accumulating of an interrelation of the various glands of internal secretion, and it is unquestionable that other such glands besides the pancreas play parts in controlling carbohydrate metabolism. Although it is possible that their action in this respect is a direct one, it is more probable that they act indirectly by inhibiting the internal secretion of the pancreas. However this may be, the varieties of glycosuria which are associated with disease of the ductless glands are of special interest, because the study of them promises to throw important light upon the pathology of diabetes.

The best known and longest known of such glycosurias is that which is occasionally met with in exophthalmic goitre. In some cases of that malady sugar appears in the urine intermittently for a few hours or a few days at a time, whilst in others there is observed a continuous glycosuria which cannot be differentiated from a true diabetes in its clinical aspects. Far more often there is a conspicuous lowering of tolerance of glucose. Sugar is not excreted spontaneously, but a far smaller dose is needed to excite glycosuria than in the case of a normal individual.

The conclusion cannot be avoided that these phenomena are effects of the excessive activity of the thyroid gland which is the essential feature of exophthalmic goitre, for similar effects may be produced by the mere administration of thyroid extract in excess, and far more readily in normal individuals, for whom any dose is in a sense an overdose, than in those in whom it supplies a physiological want. Nevertheless, patients with myxoedema who are taking thyroid extract not infrequently excrete sugar, but usually cease to do so when the drug is stopped. There is evidence that even here the pancreas is concerned in the production of the glycosuria, either by itself becoming damaged, or in consequence of the disturbance of a natural balance of internal secretions.

As might be expected, hypothyroidism has a converse effect, and one of the recognized symptoms of myxoedema is a raising of glucose tolerance. A myxoedematous patient who is not taking thyroid extract can dispose of enormous quantities of that sugar without excreting any.

As with the thyroid, so with the pituitary gland, over-activity tends to induce glycosuria or even diabetes, as is seen in a considerable proportion of cases of acromegaly in the earlier stages of the malady; whereas in cases which exhibit Fröhlich's syndrome, the pituitary analogue of myxoedema, glucose tolerance is greatly raised, a phenomenon which may have a close connexion with the laying on of fat which is a prominent feature both of hypopituitarism and hypothyroidism.

Although adrenalin, the only hormone which has as yet been isolated as a definite chemical individual, has a conspicuous power of exciting glycosuria, and may, perhaps, play a prominent part in some cases of diabetes at least, there is as yet no satisfactory evidence of the occurrence of glycosuria as a symptom of disease of the adrenal gland; but it must be borne in mind, in this connexion, that disease of a gland far more often leads to diminution than to excess of function. In Addison's disease, in which the secretory activity of the adrenals is impaired or abolished, we should expect the tolerance of glucose to be raised rather than depressed.

The glycosuria which occurs in pregnancy resembles the varieties of which I have been speaking in its clinical features. The genital glands are undoubtedly organs of internal secretion, and changes are observed in the thyroid and pituitary during gestation. These facts render it highly probable that the glycosuria of pregnancy is to be regarded as a member of the same group as that of exophthalmic goitre and acromegaly. Many pregnant women exhibit lowering of glucose tolerance, some excrete sugar spontaneously, either at intervals or continuously, and the sugar may disappear from the urine after delivery only to reappear during each subsequent pregnancy. Occasionally a glycosuria which begins during gestation proves to be the starting point of a genuine diabetes, and a glycosuria which ceases after delivery may recur after an interval and thenceforward persist.

The liver has been dethroned from the position which was once assigned to it as the reputed primary seat of disturbance in diabetes. That glycosuria is sometimes associated with diseases of the liver admits of no question, and some authorities, and amongst them Professors Naunyn and Saundby, hold that there is a definite group of cases to which the name hepatic glycosuria may rightly be assigned. On the other hand, the trend of opinion at the present day is towards regarding glycosuria, when associated with hepatic disease, as due, at least in the great majority of instances, to implication of the pancreas in the morbid process. Such concomitant affection of liver and pancreas is seen in cases in which cholelithiasis is the common cause of both, and is specially well seen in the rare cases of so-called bronzed diabetes, in which haemochromatosis of wide distribution accompanies cirrhotic changes in the liver and an extreme degree of fibrosis of the pancreas. On the other hand, in diseases which affect the liver alone there is no obvious lowering of glucose tolerance.

The occurrence of glycosuria in association with diseases of the intestinal tract, and its occasional cessation when the intestine recovers, is attracting attention in Germany at the present time. A considerable number of cases illustrating this association are now on record, and a place must be assigned to this variety among symptomatic glycosurias. It is a tempting hypothesis that in these cases the excretion of sugar is due to the spread of the morbid process to the pancreas, but it must be confessed that there is no satisfactory evidence of such implication. It is certainly important that intestinal symptoms should be looked out for in cases of diabetes, and that if found they should be treated, and there are grounds for hope that such treatment will have good results in some cases. Indeed, the discovery and treatment of the primary causative factor which lies behind the diabetic syndrome should be our aim in every case of diabetes. Therein lies our only chance of more efficient treatment than is as yet within our reach, but it must be confessed that in the great

majority of cases the underlying cause eludes our search, however thorough that search may be.

The importance of the part played by the nervous system in connexion with diabetes and glycosuria admits of no question, but it is probable that its influence is exerted in several different ways.

The classical example of a glycosuria of nervous origin is the puncture glycosuria of Claude Bernard. This is a transient excretion of glucose due to a hyperglycaemia which results from emptying of the glycogen reservoirs; and recent researches have rendered it more than probable that its exciting cause is a gush of adrenalin in response to an impulse conveyed along the splanchnic nerves. To this same class may probably be referred the similar transitory excretion of sugar which may follow a cerebral haemorrhage, an epileptic fit, a surgical operation, or a severe injury. Even the passing glycosuria occasionally observed in association with attacks of gall-stone colic, as distinguished from the more lasting excretion of sugar in some cases of chronic cholelithiasis, may belong to the puncture class.

On the other hand, it is well recognized that persistent glycosuria, and even grave diabetes, may follow disease or injury of the central nervous system, or even a severe psychic shock, but we do not yet know how large or how small a part may be played by the pituitary gland in this connexion.

During the last few days of life of some 30 per cent. of all sufferers from tuberculous meningitis small quantities of sugar appear in the urine. Frew was unable to detect, in a series of cases which he examined, any peculiarity of character or distribution of the meningeal lesions in cases with glycosuria as distinguished from others in which no sugar was found in the urine. It remains an open question whether the terminal glycosuria is due to implication of the floor of the fourth ventricle or of the pituitary gland, or is merely an example of asphyxial glycosuria, which is attributed by B. Moore and his fellow workers to accumulation of carbon dioxide in the tissues and not to lack of oxygen.

Leaving aside certain varieties which are of physiological rather than of clinical interest, we may turn to the consideration of a large group of glycosurias which may be classed together as toxic.

Many toxic substances, among which are some important drugs, have the power of exciting excretion of glucose in the urine. Among the substances referred to are morphine, atropine, strychnine, curare, amyl nitrite, copaiba, phloridzin, acetone, and uranium salts. Inhalation of chloroform, ether, coal gas, or carbon monoxide may produce a like effect. Thyroid extract and adrenalin must be added to the list, and alcohol, especially in the form of champagne, is among the toxic substances which can induce glycosuria.

The members of this very miscellaneous group bring about the result in several different ways. Some, such as phloridzin and the salts of uranium, by lessening the retentive power of the kidneys and allowing the escape of the blood sugar. Others, such as carbon monoxide, and perhaps the anaesthetics, by inducing some degree of asphyxia. Others, again, such as thyroid extract and adrenalin, are hormones which influence carbohydrate metabolism, just as they do when formed within the body and secreted into the blood. Of others, again, the mode of action remains wholly obscure.

When we glance back at the rather long list of varieties of glycosuria which on one ground or another may be included in the non-diabetic category, this much at least is evident—namely, that detection of sugar in the urine does not necessarily imply that the patient who excretes it is to be regarded as a diabetic, in the clinical sense of the term, any more than the presence of albumin indicates with certainty that the kidneys have sustained permanent damage. Yet the fact remains that just as the great majority of albuminurics have renal disease, so also most of those who excrete sugar are diabetics.

The brief remainder of the time at my disposal must be devoted to the consideration of the important practical question, What lines of treatment should be followed in cases of non-diabetic glycosuria?

When the symptom in question is due to the administration of a drug, stoppage of its administration, or even reduction of the dose, will usually suffice to bring about the disappearance of sugar from the urine. Glycosuria due to administration of thyroid indicates overdosage, and in cases of myxoedema or cretinism is a signal for reduction of the dose, but in cases in which there is no hypothyroidism it is better to discontinue the drug.

Some varieties of glycosuria do not call for any treatment, such as the transitory excretion of sugar in cases of cerebral haemorrhage, the many other forms which may be classed with puncture glycosuria, and the terminal event in tuberculous meningitis.

When, on the other hand, a more persistent glycosuria develops in the course of an infective fever, in association with an intestinal disorder, or with exophthalmic goitre or acromegaly, I hold that in addition to treatment of the primary malady, judicious restriction of the carbohydrate intake is called for, with the same precautions as should be observed in ordinary cases of diabetes. More especially is this the case in those kinds of glycosuria in which the disappearance of the sugar from the urine is not accompanied by a conspicuous restoration of glucose tolerance.

The dietetic treatment of diabetes is a symptomatic treatment, directed against the hyperglycaemia which is present, and not against its underlying cause, which, in most instances, eludes our scrutiny. The aggravation of the metabolic disorder which occurs when the diet is not restricted, and the remarkable recovery of carbohydrate tolerance observed, in many cases of diabetes, after a period of strict dietary, alike bear witness to the importance of sparing the damaged mechanism as far as possible, lest by working it in its damaged state we aggravate the mischief.

It is often beyond our power to discriminate, at the outset, between a glycosuria of little gravity and a persistent diabetes, and the possibility cannot be excluded that, by neglect of dietetic measures, a glycosuria which might otherwise be temporary may be rendered permanent.

Judicious restriction of starch and sugar will do no harm for a time, whereas to let the metabolic error run riot unrestrained may entail irreparable damage to the patient. Prudence demands that in the treatment of most cases of so-called non-diabetic glycosuria we should conform to the rules which guide us in the treatment of frank diabetes.

The clinical classification which I have here adopted is far too inadequate to form a basis for discrimination in treatment; and a classification on strictly scientific lines would refuse the epithet non-diabetic to most of the varieties of glycosuria of which I have spoken.

Any form of glycosuria which may have its origin in defective retaining power of the kidneys, whether due to the administration of a drug or to some derangement within the organism, may be styled non-diabetic without reserve. With rather less confidence the same description may be applied to puncture glycosuria and kindred phenomena. On the other hand, I, at least, believe that between a mere lowering of tolerance of glucose and diabetes of the most malignant kind the difference is rather of degree than of essential nature; and that no form of glycosuria which has its origin in an impairment of the power of burning glucose, whether or no it be accompanied by an increased mobilization of sugar within the organism, can on scientific grounds be excluded from the diabetic category.

If this be true it can no longer be maintained that diabetes is of necessity a persistent and fatal malady. It must rather be regarded as a symptom-complex which has its origin in many different causes, and which, according to the nature of the cause at work in its production, may betoken a morbid state of extreme gravity or a comparatively harmless deviation from the standard of health.

DISCUSSION.

DR. ROBERT HUTCHISON (London) said: It is important for purposes of discussion to distinguish between (1) temporary glycosuria and (2) permanent but mild (non-progressive) glycosuria. (1) Every one will admit, even allowing for errors of observation due to the occasional presence in the urine of reducing substances other than dextrose, that the transient occurrence of glycosuria is by

no means very infrequent—probably more frequent than we have any idea of. The important question follows, Is such glycosuria due to a different cause from true diabetes, or is it due to the same cause but acting temporarily instead of permanently? Owing to our ignorance of the real pathogeny of true diabetes it is impossible at present to reply satisfactorily to this question, but clinical observation tends to show that in some, at least, of such cases the glycosuria is due to causes which probably are not adequate to produce genuine diabetic glycosuria. The transient glycosuria which follows shocks or cerebral injuries, examples of which every one must have met with, seems to belong to this group, and is comparable to the "puncture diabetes" of experimental pathology. Other cases appear to be due to over-production of thyroid secretion, for example, the intermittent glycosuria met with in some cases of exophthalmic goitre. It is possible, however, that these also are of nervous origin, as there seems reason to suppose that a functional nervous disturbance underlies the production of Graves's disease. On the other hand, it seems also clear that a good many cases of so-called temporary glycosuria are really very early examples of true diabetes which happen to have been detected before the glycosuria has become permanent. In favour of this view is the fact that prolonged observation of such cases shows that a certain proportion of them pass into true diabetes sooner or later. Statistics published in America by Barringer and Roper, for instance, showed that at least 20 per cent. of patients in whom glycosuria had been discovered accidentally on examination for life insurance had developed true diabetes within five years. It is to be hoped that more observations of this sort will be published from the records of life offices in future. In consulting practice it is very difficult to follow up these cases of casually discovered glycosuria, but family practitioners are in a position to throw a very helpful light on their prognosis, and it is much to be wished that they would give us the benefit of their experience in this discussion. It is too apt to be supposed that if glycosuria disappears after a slight reduction of the carbohydrates in the diet it has been a mere "temporary" event of no importance. That, of course, is a mistake. It is only when the patient is able to return to an *ordinary* diet without sugar reappearing that the glycosuria can fairly be regarded as having been transient. Failure to observe this distinction has led to much confusion. (2) The cases of permanent but mild and, apparently, non-progressive glycosuria are often spoken of as "gouty" or "alimentary" glycosuria to distinguish them from the more malignant type, and, as is well known, such cases are by no means infrequent in elderly persons, especially if they be of "gouty" habit. I should agree with Dr. Garrod that it is impossible to draw any sharp line of distinction between these cases and cases of true diabetes. Clinical observation shows that every intermediate shade of severity of glycosuria occurs between the most fulminating and the most prolonged types. One meets every now and then with surprisingly mild and prolonged cases even in young persons, and conversely with severe and rapid cases in old persons. A case may begin with all the signs usually associated with the severe type, and yet after a time settle down into one of a benign and apparently non-progressive character. On the other hand, though, I think, more rarely, a patient who for many years has passed only a small quantity of sugar, and who has been regarded as having mere "gouty glycosuria" (so-called), may one day start to exhibit all the features of the severe and progressive variety of diabetes. Although, then, there is reason to believe that all permanent glycosurias are diabetic, it may still be true that the mild cases are brought about in a different way from the more severe. It is conceivable, for instance, that the slight permanent glycosuria often met with in elderly and stout persons is due to a failure of the tissues to assimilate sugar, whilst the severer types have a different—possibly pancreatic—origin. This may be, but our means of investigation do not yet enable us to say definitely if it is so or to recognize the underlying cause in any given case. For the present, then, it would seem best to use the term "diabetes" in a purely clinical sense, as including all cases of permanent glycosuria, no matter of what degree of severity, but to remember that the symptom-complex so labelled varies greatly even at the bedside glycosuria being its only constant symptom, and that in its pathogeny it probably varies equally, some cases being due, for example, to a failure of ferment action, others to a disturbed balance of the internal secretions, others, perhaps, to some primary error of assimilation in the tissues, and so on. In future we may learn to discriminate between the different varieties, but meanwhile I am sure it is the part of wisdom to think (even if we do not speak) of all cases of permanent "glycosuria" under the term "diabetes," and to treat them as such.

Dr. W. ALDREN TURNER (London) said: A small quantity of sugar in the urine, varying from "a mere trace" to 6 or 8 grains per ounce, is found occasionally in persons presenting themselves for life assurance. The medical examination may reveal the presence of sugar either on one occasion only (a transitory glycosuria), or its occasional appearance in those who are known to suffer from intermittent glycosuria. Those persons in whom sugar has been found under these circumstances appear to be, and feel themselves, in good health, and many of them are active and energetic in business or profession, and the detection of sugar in the urine comes to them as an unpleasant surprise. The perusal of a number of insurance records has shown that the cases of glycosuria may be grouped into several etiological classes. First, there are those in whom, shortly prior to the medical examination, an influenza or other febrile attack, or a spell of overwork or anxiety, has given rise to a transitory glycosuria (from which recovery may take place, so far as the subsequent history is revealed by the insurance records). Secondly, those whose family or personal history records the occurrence of gout in one or more of its manifestations. In a third class may be placed those in whom an occasional dietary indiscretion, or a habit of eating and drinking in excess of moderation, or an occupation requiring resort to alcoholic excess, accounts for the presence of glycosuria. A fourth class is found in which glycosuria, usually of the intermittent type, is a family feature, or in which there is a definite family history of diabetes. Glycosuria of the intermittent type may persist for many years. In my cases seventeen years was the longest period during which its intermittent presence was observed, but known periods of six to twelve years or more were not infrequent. Some of these cases are well at the present date, up to twenty-five years after the sugar was originally discovered. No complaint is usually made of any symptom—polyuria, thirst, loss of weight, or other indication of diabetes. The body weight is usually maintained at an average and sometimes a stationary level, although a type of case is found in which corpulency is the prominent feature. The specific gravity of the urine is within normal limits, and rarely exceeds 1030. The sugar may be easily kept under control or disappear entirely under a judicious regimen of food and drink.

The cases under consideration give the fourth decade as the period of life at which intermittent glycosuria is most prone to occur; but a considerable number arise during the two previous decades. Its first appearance over fifty years is rare. The age at the first appearance of glycosuria is obviously an important point when estimating the chances of favourable life assurance, as it is commonly believed that sugar in the urine is a more serious symptom in the young than the old. Of the eight cases under thirty years of age in which sugar was found at the medical examination and whose subsequent history is known, all are well at the present time at periods varying from eight to twenty-four years after acceptance. On the other hand, of the 5 cases, in whom sugar was first detected after 50, 2 died within four years, 1 lived for eighteen years, and 2 are still living at 62 and 69, five and six years respectively after the first appearance of glycosuria. It would appear, therefore, as if persons otherwise healthy and under 30 years of age in whom the occurrence of glycosuria can be definitely established on a transitory or intermittent basis, form a more favourable class for life assurance than those in whom the symptom appears after 50 years of age, when other important factors have to be taken into consideration, such as habits of eating and drinking in excess of moderation, corpulency, vascular degeneration, the transition of the glycosuria from an

intermittent to a permanent type, or possibly malignant disease of the pancreas. Cases of non-diabetic glycosuria are not uninsurable, but sugar in the urine will forbid the acceptance of the life so long as it persists. It is therefore customary to have made periodic re-examinations during a course of dietetic treatment. Should the urine remain free from sugar for a period of twelve months, the life may be accepted with a calculated addition. Uncomplicated cases, or cases in which the hereditary history is good, and the sugar of a transitory character, may be accepted with a five or six years addition to the premium, an extra which is regarded by many offices as sufficient to cover the risk. At the outset, however, it is a matter of great difficulty to distinguish the transitory from the intermittent types, some of the latter cases having begun in consequence of a temporary illness or overwork, with an interval of some years elapsing between the first sign of glycosuria and its recurrence. In like fashion the intermittent type may eventually pass into persistent glycosuria or diabetes. Cases of glycosuria complicated with such personal disabilities as obesity, cardiac disease or gall stones, or with a family predisposition to Bright's disease, diabetes or intemperance, should not be accepted at all, or only with a heavy addition to the premium amounting to ten or fifteen years.*

Dr. P. J. Cammidge (London) said: I propose to confine my remarks chiefly to questions of treatment. The conception of glycosuria as a symptom of a disturbance of metabolism, which is essentially the same in the vast majority of cases at least, greatly simplifies the treatment and renders possible the application of general principles, for the difference between mild glycosuria and the severe cases to which the name "diabetes" is generally applied can then be regarded as one of degree rather than kind. It is also obvious that, according to such a view, systematic treatment in the early stages, before secondary disturbances of metabolism have occurred, and, if possible, even before sugar has made its appearance in the urine, will offer the best chance of improvement and cure. Although clinical experience confirms these inferences and shows that the commencement of energetic individualized treatment at the earliest possible stage gives the best results, it is a fact that is not as generally recognized as could be wished, and many practitioners appear to consider that strict individualized dieting is necessary only when the disease is of a severe type. Much valuable time is therefore lost in inadequate half-measures, and the best opportunity for staying the progress of the disorder and effecting permanent benefit is often allowed to slip by. It is the lot of most of us who see many cases of glycosuria to have patients brought up for an opinion and treatment who have developed serious secondary disturbances of metabolism for lack of systematic regulation of the diet in the incipient stages, and the constant repetition of such experiences painfully impresses one with the necessity for a wider appreciation of the potential dangers of apparently mild and simple glycosurias. With the possible exception of the so-called "renal diabetes," the presence of sugar in the urine is an indication of an excess of sugar in the blood, and the aim of our treatment should be to reduce the latter to the normal, and so prevent the onset of those secondary disturbances with which its persistence is likely to be associated sooner or later. In simple cases of glycosuria, that is to say those in which there is as yet no evidence of serious acidosis and nitrogenous equilibrium is well maintained, two or three weeks on a carbohydrate-free diet will often suffice to render the urine sugar-free and reduce the sugar content of the blood to normal. But to do so it is necessary that the diet should be selected with care. It is important to remember that many so-called "diabetic" breads contain 50 per cent. or more of starch, and that many foods which are often regarded as carbohydrate-free contain a considerable quantity of sugar or starch. As an illustration of the latter point I may mention a case that was sent up to me recently. In spite of the fact that the patient was said to have been on a carbohydrate-free diet for nearly a month an analysis of his urine showed 7 per cent. of sugar, with an excretion of 132 grams for the twenty-four hours, but as he had been allowed an unlimited amount of sausage, of which he was particularly fond—and an examination of these showed that they contained nearly 50 per cent. of bread—the persistence of the glycosuria was not surprising. For some obscure reason it is often assumed that toast, or torrified flour, may be taken when bread is not admissible, but this is not the case of course. Having rendered the urine and blood sugar-free, the next step is to determine the patient's tolerance for carbohydrates by ascertaining the amounts of the commoner carbohydrate foods that can be added to the diet without causing a return of the sugar. Most patients can deal with some forms of starch better than with others, but each is a law unto himself in this respect, so that actual experiment is the only way to determine which can be used most advantageously. There is also considerable variation as to the time of day at which carbohydrates are best tolerated, and this should be ascertained also. Only one kind of carbohydrate should be allowed on one day, but the kind given on different days may be changed to give variety to the diet. The amount of carbohydrate eventually allowed should be a little less than has been found to bring about a return of the glycosuria. After a few weeks a short period on a carbohydrate-free diet should be followed by a fresh series of tests, and it will be found that in many instances the tolerance of the patient has been raised and more carbohydrate can be borne without causing glycosuria. Adults doing light work require about 35 to 40 calories per kilogram of their body weight per day; if heavy work is being done, 45 to 50 may be necessary. As the carbohydrate that can be allowed safely usually furnishes only a comparatively small proportion of the necessary energy, the balance has to be made up with protein and fat. Since starchy and sugary foods constitute from two-thirds to three-quarters of an average diet, and most people in this country object to fatty food, a restriction of the carbohydrates generally results in an excessive amount of protein being taken. It is most unwise, however, to allow patients with glycosuria an unlimited quantity of meat as is so often done, for apart from the excessive excretion of waste that it entails, and the fact that in some instances it directly increases the excretion of sugar, we have to remember that the specific dynamic effect of protein is great, metabolism being stimulated some 40 per cent. over the fasting standard by a purely protein diet as compared with 6 per cent. for carbohydrates and 14 per cent. for fats. Even mild cases of glycosuria should not be allowed more than 2 grams per kilo of protein, and this should be reduced occasionally to 1.5 or even 1.0 gram for short periods. Fats in some form or other must therefore be relied upon as the chief source of energy in most cases of glycosuria. To get in the necessary amount in an appetizing form calls for a considerable knowledge of cookery, and requires a comprehensive acquaintance with the composition of food materials. It is well to bear in mind that more than 200 grams of fat a day gives rise to dyspepsia in most people, but that this can be frequently counteracted by the administration of alcohol with the chief meals. Children require more food in proportion to their body weight than adults, for they have to meet not only the current energy requirements of their bodies, but they have also to provide for growth. A failure to recognize these facts, the use of an excess of meat, and the difficulty often encountered in inducing children to take sufficient fat are, I believe, the main reasons why the treatment of glycosuria in children is generally regarded as being unsatisfactory. Most patients who suffer from glycosuria eat, and have been eating for a long time, far more than they actually need, and one of the most important lessons they have to be taught is that they must "eat to live and not live to eat." The old adage that one should rise from the table feeling that one could eat more is particularly applicable to most diabetics. The only really satisfactory way to regulate the diet is quantitatively, and the patient must be taught not only what foods he may take, but also how much of each kind he may, and must, take to keep up his strength and body weight without overtaxing his powers of metabolism in any direction. I dealt with this subject at some length at the Liverpool meeting last year, and have discussed it more fully in my book on *Glycosuria*

* I am indebted to the Manager of the Scottish Equitable Life Assurance Society for the use of the records on which these remarks are based.

and Allied Conditions (Edward Arnold), so that it is not necessary for me to refer to it further. As I have already pointed out, the question of cookery is a most important item in the treatment of glycosuria, and a good cook is almost as essential as a good physician. The food should be thoroughly cooked, it should be appetizing, as much variety as possible should be given, and it should be served in an inviting manner. Failure in these respects is, I find, one of the chief complaints that patients make against the Continental clinics that lay themselves out for the treatment of glycosuria. An open-air life, exercise short of fatigue, the avoidance of mental worry and excitement, and careful regulation of the bowels—the last a most important point—are all contributory factors in the treatment which must not be neglected. Opium, or one of its derivatives, is often useful in the treatment of severe cases of diabetes, and although its administration may possibly lead to the contraction of the drug habit in some cases, one is faced by the choice of two evils, and of these I consider that the opium habit is the least to be dreaded. In simple glycosuria, such as this discussion is chiefly concerned with, all forms of drug treatment are unnecessary, and are only likely to do harm by distracting attention from the careful regulation of the diet that is essential.

Patience and perseverance on the part of both physician and patient are necessary if a satisfactory result is to be obtained. The disease has often been coming on insidiously for months or even years, and it may take months or years before it is brought well under control. By constant care and watchfulness, however, surprising results are often obtained, and not only may cases of simple glycosuria be put into such a position that their span of life is not appreciably shortened by the disease, but complex cases, usually described as "true diabetes," may be converted into simple glycosurias with a correspondingly better chance of recovery. Throughout the treatment the hearty co-operation of the patient is essential, and it is therefore advisable that his exact condition and the basis of the treatment, with the reasons for any subsequent modification, should be carefully explained to him.

To summarize, the four most important points to appreciate in treating all forms of glycosuria are: (1) An adjustment of the diet to the metabolic needs and capacity of the patient at the earliest possible stage; (2) quantitative as well as qualitative regulation of the diet; (3) individualization of the treatment; (4) perseverance. When these points are more fully and generally recognized we shall rarely have to deal with any but cases of "non-diabetic glycosuria," and the prognosis we can give to our patients will be improved correspondingly.

Dr. GORDON DILL (Hove) considered that, although the term "gouty diabetes" had been used very loosely, there was a glycosuria definitely associated with gout, as in those cases where, after cessation of the excretion of free uric-acid glycosuria appeared, or where gravel alternated with sugar, the cause of the glycosuria was probably not merely a general weakness of metabolism but a directly irritative action of the retained uric acid. The excretion of sugar, although at first intermittent, might become permanent, and might also be associated with other disorders caused by the irritative effects of the retained uric acid, such as interstitial nephritis, arterio-sclerosis, etc.; and, further, the subject of this glycosuria was quite as much in danger from the invasion of tubercle, diphtheria, and from the other sequelae of diabetes, as others suffering from this disease. If this variety of glycosuria associated with gout be recognized, the rule should be to treat the gout.

Dr. W. ESSEX WYNTER (London) agreed that on scientific grounds no hard-and-fast line could be drawn between diabetes and glycosuria, but their effects were very different on the patient. General symptoms were not marked in glycosuria. The knee-jerks, usually absent in severe cases of diabetes, were present in glycosuria. No acetone or diacetic acid was present in the urine in the latter. He had seen improvement follow the use of trypsinogen. An important complication associated with mild glycosuria was the occurrence of gangrene, the two conditions being constantly associated.

DISCUSSION ON FIBROSITIS AND MUSCULAR RHEUMATISM.

OPENING PAPER.

By A. P. LUFF, M.D., F.R.C.P.,
Physician to St. Mary's Hospital, London.

THE affections that we are dealing with in this discussion are the more or less chronic affections which are generally labelled "rheumatic," but which undoubtedly are not the sequelae of acute rheumatism.

Pathology.

In the great majority of the cases of so-called muscular rheumatism the pathological change is in the white fibrous tissue in various parts of the body, and to this condition the term "fibrositis" has been very aptly applied. The essential pathological change in fibrositis is an inflammatory hyperplasia of the white fibrous tissue in various parts of the body, associated with exudation and proliferation of the connective tissue elements leading to swelling and thickening of the affected fibrous tissues. This condition may undergo absorption and so completely disappear, or, if not suitably treated, it may pass on to organization with the formation of nodules and patches of thickening.

The articular structures proper—synovial membrane, cartilage, and bone—are not primarily affected, but the parts implicated are the fibrous tissues of the joints, muscles, and bones, especially the aponeuroses and insertions of the muscles, the muscle sheaths in which the muscle spindles lie, the bursae, fasciae, the fibrous ligaments and capsules of the joints, and the periosteum. Such affections cause pain and stiffness in the structures, are especially apt to recur, and are commonly referred to as rheumatic or even gouty in their origin. This inflammatory hyperplasia of the fibrous tissues occurs in patches, and is started by exposure to wet or cold, by injury, or by some irritant, microbic or toxic, conveyed in the blood. The inflamed and swollen fibrous tissue is tender, painful on pressure or on movement, and can frequently be felt on palpation, or is evident by the consequent elevation of the skin. Sudden movement of the affected muscles generally causes excruciating pain, while the local pain on pressure is one of the most diagnostic features of these cases.

The indurations may be widespread, but generally are well defined, and vary in size from an eighth of an inch to one inch in diameter. They may be situated in the subcutaneous tissue, the muscles, tendons, aponeuroses, the capsules and ligaments of the joints, the bursae, the sheaths of the nerves, and periosteum. The pain is especially aggravated by any sudden movement of the muscles which compresses or stretches the affected fibrous tissues and the sensory nerve filaments.

Kenneth W. Goadby considers that a considerable number of cases of fibrositis may be traced to the action of bacteria or their toxins. In favour of the bacterial origin of the malady, he worked on two cases of periarticular arthritis in which the urine was found to be sterile, but after the employment of massage and the application of Bier's bandage to the affected parts an organism was found in the urine resembling the *Bacillus necrodentalis* in one case, and in the other a streptococcus was obtained. An autogenous vaccine prepared in each case did some good. The microbic causation of fibrositis, however, is probably a rare occurrence, but Ware has been able to demonstrate the presence of gonococci in the inflamed muscles of the posterior axillary fold secondary to a gonococcal arthritis of the shoulder-joint. In the great majority of cases the inflammatory hyperplasia is due to a toxaemia, exposure to cold, strains, etc.

Etiology.

Local fibrositis may result from several causes, of which the following are the commonest:

1. *Cold Damp and Wet.*—In a very large number of cases the only assignable cause of the fibrositis is a history of exposure to cold and wet. Sometimes the attack comes on acutely a few hours after the exposure, as in many cases of lumbago, stiff neck, intercostal "rheumatism," and other forms of so-called muscular "rheumatism." At other times stiffness gradually de-

velops after the exposure, and passes on to the condition of chronic fibrositis. The exposure may be due to draughts, remaining in wet clothes, lying or sitting on damp ground or some cold substance, or the simple advent of damp or cold weather.

2. *Extremes of Heat and Cold.*—Sudden and considerable variations in temperature constitute by no means an uncommon cause of a generalized fibrositis which takes the form of so-called "muscular rheumatism," following on the resulting chill.

3. *Local Injuries.*—These are responsible for a large number of cases of local fibrositis. Traumatic fibrositis is a definite form, and is induced by sudden and severe strain on tendinous and ligamentous structures. Such a form may persist for a lengthened period, for whereas the slighter forms of muscular fibrositis, such as "stiff neck" and mild forms of lumbago, are usually of brief duration, that which affects the tendinous and ligamentous structures may persist for weeks, and even months. Golf produces a number of such injuries, the fibrous tissues of the muscles and their attachments to the arms and back being specially affected in this game.

"Tennis elbow" is another instance of rheumatic fibrositis.

4. *Absorption of Irritating Toxins from the Alimentary Tract.*—It has long been recognized that disorders of the alimentary tract may give rise to "rheumatic" pains. Oral sepsis is undoubtedly responsible for the development of some forms of chronic rheumatism, as likewise are flatulent dyspepsia, chronic constipation, colitis, etc. The aching in the joints and the lumbar region that occasionally occurs the day after a lengthy dinner, especially if several wines have been indulged in, is due to irritation of the fibrous tissues by the toxins absorbed from the intestinal tract, and which have been produced there by abnormal fermentation.

5. *Tonsillitis and Pharyngitis.*—The aching pains that occur in various parts of the body in connexion with these affections are well known, and are doubtless due to toxic absorption and consequent irritation of the fibrous tissues.

6. *Influenza.*—Many individuals are personally acquainted with the aches and even severe pains in the muscles, joints, and bones which accompany this disease. These are, in all probability, due to the fibrositis set up by the specific microbe or its toxin. It is not uncommon to find fibrous nodules and thickenings left as sequelae of this disease.

7. *Febricula.*—A "feverish cold" is generally accompanied by aching pains in the muscles, joints, and bones. The attack, which is sometimes described as a "rheumatic cold" or an "influenzal cold," is microbic in its origin, and the pains are no doubt due to irritation of the fibrous tissues by the microbe or its toxin.

Various Forms of Fibrositis.

The white fibrous tissues in practically any part of the body may be affected, but the liability is greater in certain situations, which will now be dealt with.

Muscular Rheumatism.—This affection is always a fibrositis. Any of the muscles may be affected. Affection of the muscles of the lumbar region constitutes one of the forms of lumbago; affection of the muscles of the neck constitutes stiff neck; affection of the deltoid muscle constitutes "deltoid rheumatism"; affection of the intercostal muscles constitutes "intercostal rheumatism." The abdominal muscles may be affected, and such nodular fibrositis in those muscles may cause either continuous pain or severe paroxysmal pain. Undoubtedly such cases have been mistaken for appendicitis, renal or biliary colic, abdominal adhesions, gastric ulcer, etc., and this, I believe, is the explanation of many laparotomies that have been performed with a negative result.

Fibrositis of the occipital and pericranial aponeuroses is a common form of headache, and one which is frequently overlooked. The indurations are most apt to occur in the retrocollic muscles, especially the trapezius, and in the temporal and other cranial aponeuroses. The attacks of headache are always associated with painful stiffness in the affected muscles. This form of fibrositis is especially due to the exposure to draughts through lack of covering to which this part of the body is necessarily subjected. I am frequently meeting with such cases of headache and fibrositis among those motorists who persist in riding in an open car with the front wind screen up, so that the neck and back of the head get the powerful back draught.

Lumbago.—This is a very typical form of fibrositis. It may be an affection of the fibrous elements of the lumbar muscles, but more commonly it starts as a localized affection of the insertions of the muscles in the vicinity of one or both of the sacro-iliac joints, since the fibrous attachments of the muscles to the back of the sacrum are especially liable to overstrain. It spreads by continuity of the fibrous tissue, as is manifested by its affecting the tendinous attachments of the neighbouring muscles, by its affecting the sacro-iliac joint itself, and by its often spreading through the joint and reaching the sheath of the sciatic nerve. This explains the very frequent association of some degree of sciatica with an attack of lumbago.

A violent strain on the spinal ligaments following railway accidents and other injuries may set up a fibrositis with long-continued susceptibility to pain on any tension, a condition which I think is not infrequently ascribed to malingering.

Dupuytren's Contraction.—This is a localized fibrositis caused by habitual postural use of the hand. It is frequently ascribed to gout, but, according to my experience, the condition has no connexion with that disease. Certainly, I have never seen any gouty deposits in the thickened tissues, nor is the affection commoner amongst gouty subjects.

Fibrositis of the Plantar Fascia.—A fairly common form of localized fibrositis is that which affects the plantar fascia. This causes pain in the sole of the foot when the weight of the body is on it, and if not arrested is liable to lead to the development of flat-foot. The fibrositis is sometimes localized to the attachment of the fascia to the inner tubercle of the os calcis, and then constitutes one of the commonest forms of painful heel. If the inflammation persists at this point it is liable to cause a local periostitis and osteitis, resulting in the formation of a bony spur, which, if not removed, constitutes a permanently painful heel.

Fibrositis of Bursae.—A chronic fibrositis of bursae is fairly common, and especially occurs in connexion with the subacromial bursa. This condition, which explains the frequency of stiff and painful shoulders, is very apt to be mistaken for arthritis or fibrous ankylosis of the shoulder-joint, or for brachial neuritis. Severe pain as regards abduction and rotation are the chief symptoms, and the pain may be so severe as to prevent restful sleep. The pain is often felt at the insertion of the deltoid, and I believe that many cases of so-called dislodgement of the biceps tendon from its groove are cases of subacromial bursitis.

Fibrositis of Joints.—Chronic fibrositis of the joints is most frequently met with in the knuckle and finger joints of those engaged in hard manual labour, especially when associated with damp surroundings. Pads upon the finger-joints constitute a chronic form of localized fibrositis.

Fibrositis of the Subcutaneous Tissue.—A form of fibrositis to which Ralph Stockman has recently drawn attention is a chronic subcutaneous fibrosis, which when it occurs in people with a large amount of subcutaneous fat is identical with the disease known as "adiposis dolorosa" (Dercum's disease).

Chronic Villous Synovitis.—This is a purely local condition and not a manifestation of a general disease, and is frequently described as "arthritis sicca." It usually occurs in the knee, and is characterized by crepitus on movement and by pain and tenderness on use. The crepitus during movement of the joint is frequently unpleasantly audible to the patient, and is especially caused by going up or down stairs. The capsule and the ligaments of the joint are more or less relaxed, and the synovial membrane is passively congested and loose. The crepitation on movement is due to the folds of the flabby congested membrane rubbing together; in other words, it is a true creaking and not a bony grating. If further relaxation of the synovial membrane results, hernial-like projections of the synovial fringe may be produced which are apt to cause a catching or locking of the joint when it is moved. In this class of cases the fluid in the joint is generally quite normal, although, if there be great irritation, some excess of it may form. The condition is very frequently mistaken for rheumatoid arthritis, but there is no erosion of

cartilage, and no eburnation of the ends of the bones, consequently bony grating can never be produced in such joints.

A valuable aid to the recognition of this condition, and to its differentiation from rheumatoid arthritis, is the careful auscultation of the joint, to which A. E. Garrod has drawn useful attention. The knee-joint should be slowly flexed and extended during the examination, and in this way the peculiar crackle or crepitus that is produced by the thickened and flabby synovial membrane is easily distinguished from the scrunch or grating sound that occurs in cases of rheumatoid arthritis, and which is due to abrasion or erosion of the cartilages.

Treatment.

If the attack is a severe one confinement to bed may be necessary, and it is important to recognize the beneficial influence of rest in such cases. For severe attacks of lumbago and intercostal rheumatism firm strapping with the brown holland strapping plaster secures the necessary local rest of the affected muscles. In all cases of brachial fibrositis the arm should be carried in a sling and should be moved as little as possible during dressing and undressing.

Drugs.—In the treatment of the different forms of fibrositis salicylates are of little curative value, as they do not exercise the same specific action as in acute rheumatism. Aspirin is of decided use for the relief of pain in severe cases, but it should only be given with that object. It acts better than the sodium salicylate owing to the fact that the introduction of the acetyl radicle increases the analgesic action of the salicylic acid. It probably also exercises a beneficial effect in cases of abnormal intestinal fermentation. Perhaps the best method of administering this drug for the relief of pain consists in giving 10 grains of aspirin with 6 grains of pyramidon in a cachet every four hours. Potassium iodide is, in my opinion, the most valuable drug in the treatment of fibrositis. It seems to exercise a direct effect in removing the hyperplasia and serous exudation in the fibrous tissues. It should always, if possible, be given in full doses of 10 or 12 grains, and should be combined with tonics, such as nux vomica or the compound glycero-phosphate syrup. If the iodide produces severe symptoms of iodism one of the organic iodine compounds may be tried. Of these I have found iodipin, in the form of tablets, extremely useful.

Fibrolysin.—This is a chemical combination of thiosinamin and sodium salicylate, for which the claim has been put forward that it has a softening effect upon all forms of pathological fibrous tissue. I have given this drug an extensive trial in a large number of cases which were kept under careful observation both during treatment and for a long time after it was discontinued. The results were as follows:

No benefit	71 per cent.
Some improvement	17 ,,
Cured	12 ,,

From these results it appears to me that fibrolysin has a very limited use, and I cannot avoid the inference that the claims that have been put forward for this preparation must be considered extravagant.

Local Treatment.

For the complete dispersal of the indurations in most cases of fibrositis, and certainly in the severer cases, local treatment must be adopted. This may best be considered under the following headings: External applications, heat and electrical treatment, massage and exercises.

External Applications.—In the early stages of an acute fibrositis hot fomentations are useful. Afterwards one of the best external applications in my experience is a mixture of equal parts of chloral hydrate, camphor, and menthol. These three substances form a liquid when well rubbed together. This liquid should be painted over the painful area, and then be gently rubbed in with the fingers. Another useful external application is to paint the painful area with tincture of iodine and then to apply a hot linseed poultice or a very hot fomentation. The heat converts the iodine into vapour, which exercises an anodyne effect, and, probably by absorption, directly acts on the affected fibrous tissues. In the later stages the aconite, belladonna, and chloroform liniment applied on lint is frequently most beneficial. In cases of a very localized fibrositis counter-irritation is sometimes of great use, especially in the form of the thermo-cautery. In severe cases of acute fibrositis a few leeches will sometimes give great relief.

Heat and Electrical Treatment.—In localized forms of fibrositis, and especially where fibrous deposits occur, the most effective form of local treatment that I am acquainted with is the employment of heat followed by ionization of the affected part. This treatment has a very remarkable effect in causing the absorption of thickened fibrous tissues. Heat increases the supply of arterial blood, and so causes a state of active congestion, stimulates leucocytosis and metabolism, lowers blood pressure, causes diaphoresis, relieves pain, and enhances the effect of the ionization that is to follow. If heat is to be applied to the entire body, the electric light cabinet bath is the most convenient form, but in the treatment of localized forms of fibrositis it is preferable to concentrate the heat on the affected part only, and I am confident that far better results are obtained from the employment of dry radiant heat than from the employment of heat alone. C. F. Bailey, of Brighton, is rightly recognized as one of the pioneers of this method of treatment, and he has especially obtained brilliant results by the use of the leucodescent radiant heat lamp, followed by ionization with a 2 per cent. solution of lithium iodide.

In cases of chronic villous synovitis of the knees this combined heat and ionization treatment is most effective, and in all cases gives the most satisfactory results.

In cases of lumbago the static wave current may be substituted for ionization. F. H. Humphris records excellent results with this form of treatment. It produces a local vibratory effect and muscular contraction takes place, so that the wave current tends to remove the infiltration by squeezing out the serous exudation from the affected tissues, and thereby relieving the pain. From my experience of a number of cases that I have had successfully treated I can thoroughly recommend the employment of local heat, followed by the use of the static wave current.

Massage and Exercises.—Massage is very useful in the later stages, but it should only be employed when it causes no pain. The manipulations should be very gentle at first, so as to promote removal of exudation and to relieve the tension. Afterwards more vigorous massage is most efficacious in dispersing the indurations and fibrous thickenings, and in removing the stiffness of the affected parts. General massage should not be employed, but the tender and affected areas should be carefully marked out for treatment. Massage should not be used to affected joints, but only around them, so as to improve the circulation in their neighbourhood. I have frequently seen the most disastrous results to joints from their over-zealous manipulation by masseurs and masseuses, as such treatment only increases the inflammation and bruises the synovial fringes. The same remark applies with equal force to acute affections of the bursae and tendon sheaths, and to fibrositis of nerve sheaths until the acute affection has entirely subsided.

Spa Treatment.—This is most useful in protracted cases of fibrositis, especially when the waters are strongly radio-active. Undoubtedly the radio-active emanations of such waters are powerful adjuncts in the dispersion of the thickenings and deposits.

Diet.—Unlike gout, no special dieting is required in these affections. Moderation should be the keynote of all prone to the various forms of fibrositis, and especially should they avoid foods which their experience has taught them to be apt to produce gastro-intestinal fermentation. It has become of late years a fashionable craze to attribute many of these forms of "chronic rheumatism" to uric acid, but I am firmly convinced that that harmless by-product of the human economy plays no part whatever in the development of the various forms of chronic rheumatism or fibrositis.

Underclothing.—With regard to the underclothing that should be worn by rheumatic individuals, I must confess that I am a convert to the view that porous linen underwear is the most suitable. It allows of the free evaporation of perspiration and so prevents a more or less sodden garment from remaining in contact with the skin, which

so frequently happens with those who wear woollen underclothing. I am convinced that in the latter case such sodden garments are a frequent cause of many of the forms of fibrositis. Some individuals find that in winter linen underwear is too cold, and in such cases a thin silk vest may be worn over the linen. This will be found to constitute a thoroughly warm, comfortable, and safe form of underwear.

DISCUSSION.

Dr. F. Howard Humphris (London) said: Dr. Luff has just told us that the essential pathological change in fibrositis is an inflammatory hyperplasia of the white fibrous tissue in various parts of the body, associated with exudation and proliferation of the connective tissue elements leading, if not properly treated, to swelling and thickening of the affected fibrous tissues. This condition may undergo absorption, and so completely disappear, or, if not suitably treated, it may pass on to organization with the formation of nodules and patches of thickening. He further said that the inflamed and swollen fibrous tissue is tender, painful on pressure or on movement, and can frequently be felt on palpation, or is evident by the consequent elevation of the skin. I have, at the risk of repetition, laid emphasis upon the salient points of the pathology of fibrositis, and I propose to show how the treatment, which I shall presently describe, directly relieves this pathological condition; and with the relief of the pressure caused by the exudation, comes the relief of the pain, which tends towards that termination which Dr. Luff foreshadows in successful cases, namely, that the condition undergoes absorption and completely disappears. The treatment, so far as electricity is concerned, should, in my opinion, consist of exposing the affected part to the influence of a powerful incandescent light. This should cause relief within a few minutes. In some cases it will be necessary to follow this treatment with some other form of electricity. Personally I prefer what is known as the "static wave current." This has been far more successful in my hands than any form of ionization. In some mild cases, notably stiff neck, mechanical vibration is of service.

I will now discuss what I may call the "light and wave" treatment in detail. The light is a very simple affair, consisting of 500 candle-power incandescent electric globe, with a carbon filament capable of carrying 12 to 15 ampères of current. I have tried five lamps each of 100 candle-power, but this did not give me the same success as the one lamp of 500 candle-power, and this has been explained to me that owing to the larger ampèrage necessary to produce the candle-power in a single lamp we get a different spectrum richer in ultra-violet as well as ultra-red rays than is obtainable from a cluster of lamps. The globe carrying the incandescent filament is surrounded by a cone-shaped metal hood, the whole being so balanced that it is easily swung to and fro, and this is the desired method of using the lamp. The distance between the skin and the lamp depends on the toleration of the patient, and this toleration varies with the severity of the pain and other elements of the personal equation. The light must be applied directly to the skin. Its virtue seems to diminish if there is any imposing clothing, however light in texture.

The patient should be instructed to notify the operator on the first sensation of the feeling of the lamp being unbearably hot. Incidentally the lamp should be swung away for a few seconds, so that no rays fall on the part which is being treated; alternatively, the hand may be lightly brushed on the skin, which will also relieve the burning feeling. The number of applications, their frequency, and the duration of the whole treatment depends so much upon the amount of pathological change present in each individual case that no time limit can be laid down. The physician must be guided by the result obtained. In case of pain, if the pain can be relieved and held in check by one daily application until it disappears entirely, then daily applications are indicated. In some cases, however, at the beginning, the applications may have to be twice daily, but in others thrice weekly will sometimes suffice. A case of simple acute lumbago may be expected to clear up in a few days, while a case of years' standing may take several weeks. As a general rule, the longer the duration of the complaint has been, the longer will it be necessary to continue the treatment—that is, the longer it will be before the pathological condition which is causing the trouble will be replaced by the physiological state. There should be no sense of fatigue or depression following an exhibition of the rays.

So much for the details of the light treatment. And now to see the way in which it acts. The first obvious result we notice is the dilatation of the cutaneous vessels. The deeper action may be due partly to this, for with the filling of the capillaries a better circulation is established in the deeper vessels, and also the stasis may be relieved by the heat generated by the resistance of the light energy. It is well known that whenever energy meets resistance at any point, heat is generated at that point, and I suggest that with a better circulation established by the capillary dilatation and the heat generated in the deeper parts the stasis and inflammatory hyperplasia is relieved, and the swelling and thickening of the fibrous tissue diminished; and with the improvement of the circulation absorption will have a tendency to take place, and the risk of organization with the formation of nodules will be lessened. The static wave current (so called because in the completion of its circuit Hertzian waves emanate from the patient's person) is applied for its mechanical action. I will not attempt to describe the mechanism by which this current is produced, nor go into its electrical characteristics. Suffice it to say that a metal plate is placed over the painful area, and an interrupted current is administered at a voltage of about 500,000. The effect is to produce painless contractions, about 120 to 180 per minute. The most important attribute to this current is its mechanical action. It causes not only alternate contraction and relaxation of the muscles which can be seen, but also the contraction of the deeper tissues. It produces contractions which are obvious both to patient and to any observer, and which correspond to each interruption of the current. Turning back once more to the pathology which Dr. Luff has laid down, it is not difficult to understand why the contraction and relaxation caused by the static wave current should improve that condition of faulty metabolism which he has described, and remove the swelling and thickening which we have seen is the essential pathological change; and used with the high candle-power light appears to me the best as far as we know at present—the best electrical treatment of fibrositis and muscular rheumatism.

Dr. George Parker (Clifton) said: If we are here once more splitting off a definite complex of symptoms from the old rheumatic group, we must ask whether this disorder is due to a specific organism, or is it, just like pleurisy, a mechanical change due to a systemic infection by all sorts of bacteria? That has to be cleared up, and also the question whether any metabolic changes precede an attack; more particularly, Can we exclude any variation in the excretion of uric acid? I have been much struck with the enormous number of cases of so-called brachial neuritis of late years in my electrical department. They are all marked with perfectly definite tender spots—one over the insertion of the deltoid, one over the subacromial bursa, two or three on the edges of the scapula, and possibly others over the nerve trunks, or over the pectoralis muscles. After an experience of three attacks myself I have learnt to look for, and recognize, these spots, which, when pressed, feel like a small boil under the skin, though the patient may have previously not noticed them. These cases are true instances of fibrositis; the joint is really unaffected, and they are distinct from, though difficult to separate from, some forms of peripheral neuritis and of writer's cramp. Another curious symptom in many of these patients is inability to sleep from the pain until they have placed the forearm behind the back of the head in an apparently strained position, possibly due to the relief to the strain on the subacromial bursa. It would be of great value if our radiographers would show us how it is possible to render these nodules visible under the *x* rays, for the diagnosis between these cases and various joint and other diseases is all-important. Again, there are, we are told, certain nodules around the finger and other joints due to fibrositis; but, besides true rheumatic nodules, Heberden's nodules and those due to rheumatoid arthritis, there are

occasionally certain absolutely painless, hard, chronic nodules on the interphalangeal joints which may possibly be fibrositic, though of this I am doubtful. As to treatment, I can support what Dr. Luff has said, laying stress on the importance of rest, gentle massage, heat, ionization, and nerve sedatives. A simple application, which gives much relief of pain, is salicylic acid, menthol, and lanoline, with or without belladonna smeared over the painful area and covered with waterproofing. It eases pain, while it has not the penetrating odour of methyl salicylate, and it rarely irritates the skin.

Dr. CROFTON (Dublin) said he did not think cold, damp, draughts, etc., would produce fibrositis unless the patient had microbes capable of producing the inflammation in them; he thought that cold, etc., simply acted by reducing the resistance of the body as a whole or of the part affected. He thought many microbes and their toxins produced fibrositis, but that the most common etiology was as follows: A focus of infection capable of infecting the gastro-intestinal tract. This was most commonly situated in the gums, less commonly in the naso-pharynx, tonsils, or bronchial tubes. The microbes got into the circulation either directly from pyorrhoea by means of the lymphatics, etc., or through the intestinal tract. When swallowed the microbes infected the gastro-intestinal tract, lowering its resistance, and in combination with *coli* organisms, which become pathogenic at any lowering of the normal immunity of the tissue cells with which they come in contact, producing abnormal decomposition of the food contents of the intestines. By far the commonest, but by no means the only, microbes concerned in the local infection of the upper alimentary and respiratory tracts were streptococci. He believed this combination was also most commonly the cause of other rheumatic infections, such as rheumatoid arthritis, neuritis, etc. He treated these cases by autogenous vaccines from the local infection, and from the coliform organisms isolated from the faeces. He used symptomatic treatment as well, and referred to the experimentally ascertained antitoxic powers of iodine and sulphur. He thought a combination of iodine and thiosinamin was useful. It was necessary to be sure that the alkalinity of the blood and tissue juices was normal, since antibodies did not act well if there was any acidosis. He used sodium nitrate to correct this if necessary.

Dr. PRESTON KING (Bath) suggested that fibrositis was probably due to an infection. He thought that the fibrositis of the joints could hardly be differentiated from what was known as rheumatoid arthritis by the nature of the creaking or crackling which was heard and felt on examining the joint, as Dr. Luff suggested. He had found both the conditions spoken of by Dr. Luff occurring in the same patient. He had found the application of heat followed by ionization most useful, especially in conjunction with the radio-active waters of Bath. He entirely agreed that massage should never be given when it caused pain, and his experience with iodides and drugs generally quite agreed with that of Dr. Luff.

Dr. MARION GILCHRIST (Glasgow) said: There are one or two points to which I would like to refer. I should like to confirm what Dr. Luff said as to fibrositis in the abdominal muscles often leading to a mistaken diagnosis of visceral diseases, such as appendicitis or oöphoritis. I have seen many cases in which such mistakes have been made, and will instance one specially: A patient came into my hands several years ago who had been kept in bed more or less for over twenty years, said to be suffering from ovarian disease. She had been seen by several eminent gynaecologists, who confirmed this diagnosis, but said she would not stand an operation. I found marked fibrositis of the abdominal muscles, and ordered massage. Under this she improved rapidly and her abdominal pains disappeared. Lately this patient died, and *post-mortem* examination revealed perfectly healthy ovaries. The diagnosis in joints is best made, especially in the later stages, by *x*-ray photographs. I agree with Dr. Luff about treatment, except on one or two points. My experience is that massage, to be effective, must in some cases be painful. In many cases I have had massage given which gave the patient no pain and also gave him little or no relief, and later have ordered him hard deep massage, which gave him great pain—and magnificent results. But I consider it of more importance than Dr. Luff does, especially in patients who are at all fat, and in this connexion I also find thyroid administration of great value. With regard to electrical treatment, I find ionization and other methods of great value, and especially the ionization of joints. It also has a great effect in relieving pain, and is of great use in this connexion when massage is painful, but I always get the best results when it is combined with hand massage. I am in entire agreement with Dr. Luff about clothing, and strongly recommend the wearing of linen under-garments. Apart from the advantages of this mentioned by Dr. Luff, linen has the very great merit of standing boiling, and in this way can be thoroughly disinfected constantly.

Dr. O. HEINEMANN (London) said: It appears that iodine is the drug of preference in the ionic treatment of rheumatic diseases. This method has been very satisfactory in my hands. However, I find that most books on ionic medication recommend salicylates. I also understood that lithium salts are considered specifics for gout, and I would like to have further information from Dr. Luff as regards their use in the cataphoric treatment of fibrositis. I am glad that the possibility of formation of hydroxides has been mentioned by Dr. Humphris. When I first started ionic medication I found wounds on the patient's skin after my applications, which took a long time to heal and were very troublesome. I believe that they are caused by the NaOH or KOH formed by electrolysis. As to Dr. Crofton's remarks, I cannot agree with him regarding the diagnostic value of the amount or percentage of uric acid found in the patient's urine. I have carried out estimations by Hopkin's method for three years, but I could not detect any relation between acidity of the urine and the health of the patient under observation. I am also sorry that I must contradict Dr. Crofton's statement that iodoform is less toxic than potassium iodide, and I do not believe in general conclusions drawn from the results of bacteriological investigations of the intestinal contents, nor would I hope to get a result from vaccines made from numerous bacteria which happen to inhabit the colon at the time of the investigation, but I do believe that sepsis is in many cases responsible for rheumatic diseases, and we are even justified in taking a previous speaker's remark as serious when he hinted that bacterial infection will soon be made responsible even for glycosuria. Recent researches have convinced me that though sepsis is not the cause of diabetes mellitus, it greatly supports the disease. The cure of a septic condition will not do away with either rheumatism or glycosuria, but will help us in our therapeutic efforts.

Lieut.-Colonel W. G. PRIDMORE, I.M.S., said: The majority of cases which come under treatment are the chronic slighter cases, and these are the most difficult to cure. Most of us after a certain age suffer from fibrositis to a more or less extent. I believe I am right in saying that children do not suffer from these attacks of fibrositis, and therefore I cannot believe that cold can cause an attack. Children sit in draughts, and are exposed to cold as much as adults, and they never get lumbago and stiff necks. It is not fair to say that cold is a cause. There seem to be two sections, one of which holds to the bacterial cause and the second to the non-bacterial. I think we must combine. There must be some form of poison inside the body, either bacterial or dietetic, before fibrositis can be caused by cold, or anything else. Dr. Luff mentioned fibrolysin. I should like to ask if he has found any danger from using this. The other day I heard of a case in which it was used, and which ended fatally.

Dr. WARDEN (Paris) said that it had not been made clear whether fibrolysis, muscular rheumatism, and allied conditions were due to bacterial infection or to defective metabolism. He asked if, in Dr. Luff's opinion, the term "autointoxication" covered the etiological factors of the disease in question. The principle underlying the various treatments proposed lay surely in their eliminative effect, and he ventured to recommend to members the use of Guelpa's well-known method of disintoxication.

DIFFERENTIATION IN CHRONIC JOINT AFFECTIONS.

By PRESTON KING, B.A., M.D.Camb.,
Honorary Consulting Physician, Royal Mineral Water Hospital, Bath.

THE term "chronic arthritis" of course includes all cases where, as a result of disease or injury, there are left changes more or less permanent in the joints. I do not propose to attempt to enter into the differentiation of all such cases, but shall confine myself to that sufficiently large and indefinite group which is at present known as rheumatoid arthritis.

It is very remarkable, after all that has been written and spoken upon this disease, to see the vagueness and uncertainty that still exists about it. In the few remarks that I have to make to-day I hope to be able to throw out some suggestion which, by leading to a discussion, may be of help in putting on a clearer basis what we mean when we speak of rheumatoid arthritis.

The differentiation of this form of chronic arthritis has not been assisted, but has rather been obscured, in the past by "osteo-arthritis" being allowed, in the nomenclature of the Royal College of Physicians, to be used as an alternative title for it.

This being so, and seeing also the vagueness that exists as to what cases should and what should not be included in this disease, it is small wonder if at times we find it hard to follow some writer's meaning and to know to what class of cases he is alluding. It would almost seem, judging from experience in Bath, that the term "rheumatoid arthritis" is used by some as a sort of dust-heap upon which to sweep all chronic joint affections which do not, like true gout, carry their obvious nature with them.

The term "rheumatoid arthritis" is at present applied to the case of some old man whose joints, perhaps as a result of injury, are stiff, and limited in movement by bony outgrowths, but who otherwise is well. It is applied to the case of a woman whose only trouble is some long-standing pain and creaking in the knees; and finally, it is applied to some young girl who is suffering from polyarthritis with fusiform synovial swellings of all her joints, with no bony outgrowths, but marked general debility, and a hectic fever. What have these cases in common that they should be classed together, and described as belonging to the same disease?

I suggest that these cases have no connexion with each other. They are unlike in their cause, their progress, and their every feature. The only thing they have in common is that in each the joints are affected, and even here the affection is different in them all.

Rheumatoid arthritis has been described as more common among women, and chiefly occurring at two periods of life, the one between the ages of 20 and 30, and the other over 40. I think it would be well, and be a help in differentiation, if we could limit the use of the term "rheumatoid arthritis" to the former of these groups, and class the others, those occurring in later life, as "osteo-arthritis." If we could do this it seems to me we should clear away much of the uncertainty and vagueness which must exist while all these cases are described together. What I suggest seems at least to have its reasonableness to recommend it, since in reality these groups are quite distinct, and differ from each other in the following important points.

Rheumatoid arthritis, used then in the way I have suggested for the earlier cases, is far more common among women. It is before all things a polyarticular disease, whose onset is rapid, accompanied frequently with fever, and always with great debility, and rapidly leading on to crippling. The nervous symptoms are marked, the muscular wasting is out of all proportion to disuse, the reaction of degeneration is often present, and the tendon reflexes are increased.

In osteo-arthritis, on the other hand, the onset is slow. Sometimes one joint only is affected; the general health is fair; the crippling is slight, being only due to the bony outgrowths; the muscular wasting is only in proportion to the disuse; the reflexes are normal; and finally, there are Heberden's nodes on the terminal phalanges, which are not present in rheumatoid arthritis. In osteo-arthritis the joint trouble is the most important feature, while in rheumatoid arthritis this often takes quite a secondary place in the clinical picture, being overshadowed by the more important symptoms due to changes in the nervous, the circulatory, and the vasomotor systems.

The peculiar deformity of the hand, with inverted finger and ulnar deflection, belongs chiefly to osteo-arthritis, while a typical case of rheumatoid arthritis shows fusiform elastic synovial enlargement. Of the claw-like appearance of the hand in osteo-arthritis no proper explanation has ever been forthcoming. It has been said to be due to the overaction of the interossei and lumbricales. It is, indeed, the position which the action of these muscles tends to produce; but why in a wasted muscular system these special muscles should make their existence so marked is not explained. I would suggest as being a much more likely cause that the laxness and stretching of the periarticular sheaths and tissues, by allowing the flexor and extensor tendons to pass from their proper line of traction, is accountable for the deformity.

The use of the *x* rays as a means of differentiating among these chronic joint affections is disappointing. In osteo-arthritis the bony outgrowths will certainly be shown, but they can also be seen generally with the eye or felt by the touch. It has been claimed that in rheumatoid arthritis the bones are more translucent, owing to a supposed loss of lime salts, but this is not my experience. I have not found, after taking a considerable number of skiagrams, that there is more bone translucency in rheumatoid arthritis than in other diseases in which wasting occurs. It is hardly necessary, moreover, to point out how many unknown or variable factors there are in the production of an *x*-ray photograph. There is the penetration of the tube, the distance from the plate, the thickness of the object, the exposure, the development, and the printing, and besides all this there is the personal equation of the operator. I think, with a little care, I could show that the bones in rheumatoid arthritis are somewhat denser than is normal.

The points of distinction, then, to which I have drawn attention, between osteo-arthritis and rheumatoid arthritis, seem to justify the differentiation of the one from the other, and to suggest that they should be described under separate headings. It must be remembered, however, that a case of rheumatoid arthritis may progress and pass on till it becomes one of osteo-arthritis, and this in spite of the fact that it may have been treated at Bath, or by the administration of potassium iodide, or even lime salts.

In differentiating between osteo-arthritis and rheumatoid arthritis I do not for a moment wish to suggest that they should be regarded as distinct diseases; indeed I think it is a question whether either of them should be considered a disease at all. A distinct disease should have a distinct and common cause, and the results that this cause produces should be fairly constant. But this cannot be said of either of these forms of chronic arthritis. The various micro-organisms which have been claimed as the one specific cause have none of them stood the test of time. But, while there is no one germ that is accountable for these conditions, we can say for reasonable certainty that in both of them the clinical features are frequently produced, and the symptoms caused, by many and quite different infections. I think, then, with our present knowledge we should regard osteo-arthritis and rheumatoid arthritis not as distinct diseases at all, but rather as conditions in which various causes, some of which are germ infections, produce results which vary according to the nature of the soil, and the special tendencies of those who have inherited a joint diathesis.

Though osteo-arthritis and rheumatoid arthritis may either of them be due to infection, it is usually easier to trace this infection, and certainly easier and more hopeful to treat it by vaccine in the latter than in the former. Among sources of infection pyorrhoea alveolaris and gonorrhoea are the most common, while I have also had successful results from vaccine made from leucorrhoeal discharge. Auto-intoxication from toxins of the alimentary canal is also a potent cause. One of the casts handed round was taken from a case of acute and crippling rheumatoid arthritis. It is typical of an infective case, but it was taken many years ago before attention had been drawn to the infective origin of the disease. The symptom came on quickly during an acute attack of Burmese fever, and whether this was the source of the infection or whether—for the patient

was in the army—the fever woke up some dormant gonococci, I do not know. There was great muscular wasting, and nearly all his joints were affected, including the temporo-maxillary articulation and the spine.

With regard to the affection of the temporo-maxillary joints, it is an interesting point to notice that while it is frequently seen in rheumatoid arthritis, and almost always in the infective cases, and associated with spondylitis deformans, it is seldom seen in osteo-arthritis, in which spondylitis deformans alone is often met with.

In conclusion, then, I would suggest that osteo-arthritis should be differentiated from rheumatoid arthritis; that neither of these conditions should be considered a distinct disease, and seeing that either of them may be due to an infective process, it might be well to form a third group, and speak of it merely as an infective arthritis.

THE HEART AS AFFECTED BY THE STOMACH.

BY

WALTER BROADBENT, M.A., M.D.Cantab., M.R.C.P.,

Assistant Physician to the Royal Sussex County Hospital; Physician to the Royal Alexandra Hospital for Children.

IT was a frequent saying of my father, Sir William Broadbent, "When a patient comes complaining of heart trouble, never omit to carefully examine the stomach."

Both the heart and the stomach derive their nerve supply from the vagus and the sympathetic. Among the sympathetic fibres supplying the heart are the augmentor nerves, and stimulation of the cervical sympathetic causes marked acceleration of the heart. The vagus fibres going to the heart are inhibitory, slowing the heart if stimulated. They are also in constant action restraining the augmentor fibres, since, if in a dog the vagi be divided, or their nerve endings be paralysed by atropine, the heart beats very rapidly from the normal action of the augmentor fibres.

Anatomically, the heart is also in close relationship to the stomach, the ventricles and the right auricle are in contact with the diaphragm just above the stomach. If the stomach becomes distended and forces the diaphragm upwards, there must be pressure on the heart. It is very difficult for the heart to contend with pressure from without, since that acts by hindering the expansion of diastole, and diastole is largely a passive relaxation of the cardiac muscle fibres with no power behind it. The filling of the right auricle is due to venous pressure, and the right ventricle is mainly dependent for its charge of blood on the systole of the weak-walled auricle. If the heart is affected by cloudy swelling after an illness, by myocarditis, by degeneration (fibroid or fatty), or by adhesion of the pericardium, the effects of pressure will be much greater than on a normal heart. The right ventricle, owing to its thinner wall, will be more disabled than the left, and if a distended stomach presses up the diaphragm, it may easily be impossible for the right ventricle to get its fill of blood to pass on through the lungs to the left side of the heart for the general circulation.

A third way in which the stomach may affect the heart is by faulty digestion allowing of fermentation within it. The products of decomposition of food may be poisonous to the heart muscle, or may act on its nerves in a way similar to atropine.

These three elements—the reflex nervous effects, the pressure, and the poison—may all be in action in the same case, or only one or other of them.

It is probable, as Sir Michael Foster used to teach, that the fainting or sudden death after a severe blow over the stomach is due to vagus reflex inhibition of the heart. It is well known to surgeons that operations on the upper part of the abdomen give rise to far more shock than operations on the lower part, and that the large and small intestines can be extensively removed with much less risk than that incurred by a large resection of the stomach. The Fowler raised position after operations for peritonitis probably owes a great part of its success to the removal of irritating fluids from the region of the peritoneum supplied by the vagus. The unexpected deaths which occur within a few days of the performance of gastrostomy in cases of malignant stricture of the œsophagus are perhaps due to vagus reflex effects on the heart weakened by starvation.

From a medical point of view the most frequent reflex effect is palpitation. Palpitation may arise from many causes, but every writer mentions gastric disorder as one. It is quite usual for a patient to say that, as soon as he or she can bring up some wind, the attack stops. In these cases it will be found that the resonance over the stomach is very tympanitic, and often a bell note can be obtained by striking one coin upon another. It seems probable that the stomach wall is unduly stretched, and a reflex started which inhibits the action of the vagus, or possibly pressure may be irritating the heart, as the gastric resonance is abnormally high. A dose of sal-volatile, by causing the eructation of some flatulence, will frequently cut short an attack.

Another form of palpitation characteristic of stomach disorder is that which comes on in the early hours of the morning, waking the patient from sleep. In these an extensive stomach splash is usually found, and products of fermentation may be acting upon the heart. Massage of the stomach to empty it last thing at night, or lavage, almost invariably will stop this form. Huchard, the great French teacher, says: "Les maladies de l'estomac sont souvent la cause de palpitations, et celles-ci sont d'autant plus rebelles que ces affections sont souvent latentes ou méconnues." In practice, treatment of the stomach and nerves is more successful than treatment of the heart itself.

In sufferers from paroxysmal tachycardia, also, attacks are frequently brought on by distension of the stomach. Mackenzie, a few years ago, was the first to make clear the distinction between palpitation and paroxysmal tachycardia. He pointed out that in palpitation the rhythm of the heart is normal, the auricle contracting before the ventricle, and the auricular wave appearing in the venous pulse tracing; but, in paroxysmal tachycardia, the nodal rhythm occurs, the ventricle contracts first, the auricle contracting, if at all, during the ventricular systole. The pulse is generally irregular, and the venous tracing shows a ventricular wave only. I have at present under my care a lady with a constantly irregular heart, with nodal rhythm, who suffers from paroxysmal tachycardia. Whenever she feels an attack coming on, she can almost invariably quickly stop it by a mixture containing liquor pepsin cum bismuth and nux vomica, which I gave her during one attack in conjunction with Nativelle's digitalin. She now does not take the digitalin, as she says that the medicine alone is effective. Normally her gastric resonance does not rise above the seventh rib, but when seen during an attack it is invariably up to the fifth rib.

Intermittency of the pulse is often associated with stomach disorder, more commonly that due to extra-systoles, which do not send a pulse wave through to the wrist. An elderly gentleman, who passed through a sharp attack of bronchitis last winter without the slightest irregularity of his pulse or any symptom of heart trouble, in May, after an imprudent dinner, suffered from indigestion, which, though only giving rise to slight nausea, caused very marked giddiness. His pulse was quite irregular, and, on listening to his heart, there were very frequent extra-systoles. Gastric resonance was found to be as high as the fifth space. In about a week, on simple diet, and with medicines directed solely to the gastric condition, the pulse steadied down, through a stage of intermittency, to become quite regular again. The giddiness disappeared, and the gastric resonance subsided to the seventh rib level.

Pseudo-angina pectoris is another disorder which is generally attributable to flatulent distension of the stomach. The pain may be as severe as that of true angina, and may spread down the arm, but it comes on an hour or so after meals and in the middle of the night, and not during exertion as a rule. In most cases, also, the heart does not appear sufficiently diseased for there to be true angina. The following case, which I saw several times, is a good illustration:

A middle-aged lady with a thick-walled, high-tension pulse had for some months been subject to "suffocative feelings" in the chest, coming on generally about an hour after meals. Then pain took the place of these feelings, and spread to the left arm. The attacks became more frequent, occurring five or six times a day and once or twice in the night, and had no relation to exercise. On examining the heart the apex beat was an inch outside the nipple line, but was forcible, and the sounds were good; the aortic second sound was accentuated.

There was no complaint of indigestion, but the stomach was very tympanitic, and its resonance up to the fifth rib. Dieting, alkaline carminatives, and blue pill unexpectedly produced no improvement. Trinitrin gave a little relief, but not much. I then put her on milk and junket only, and stopped all medicines. Six hours after commencing the milk diet the attacks of pain ceased, and have never recurred. After a week she was allowed bread and milk, and was gradually got on to ordinary food.

But flatulent distension of the stomach may bring on attacks of true angina. A man walked up to my out-patient department one day a few years ago complaining of attacks of pain in the chest. He had aortic regurgitation, and I noted very high gastric resonance. He was sent up to the wards for admission. While getting ready for bed he suddenly clutched his chest, and, before anything could be done, fell back dead. At the autopsy the condition of the heart did not suggest that he had come to the end of his tether, and the pressure upwards of the stomach was probably the real cause of his death.

In other forms of valvular disease, especially when the right side of the heart is much dilated, any rise in the height of the diaphragm is a source of embarrassment to the heart. Cases with mitral stenosis have, in my experience, been more affected by flatulent distension of the stomach than those with pure regurgitation, possibly because the whole heart is hypertrophied in mitral regurgitation. Sir William Broadbent relates an instance of sudden death in a patient with mitral stenosis and regurgitation, who, after a hearty breakfast in bed, bent forward over a basin to wash his face.

The last disease of the heart that there is time to mention is fatty degeneration. Sufferers from this are peculiarly susceptible to bad effects from gastric distension. Intermittence of the pulse, giddiness, fainting, and attacks of angina pectoris may all be brought on, and many cases of sudden death are attributable to this cause. One of my patients, who for a long time had had an almost inaudible first sound at the apex, died one morning while stooping to pick up his newpaper from the floor soon after breakfast. In these cases management of the digestion is quite as important as treatment of the heart.

DISCUSSION.

Dr. E. DUKE (London) said the present subject was one upon which all knew something, and referred to the "tumbling" action of the heart in dyspepsia associated with distension; the simple remedies—namely, potassium bicarbonate before meals, and also small doses of tinct. strophanthus and nux vomica—were useful. For the treatment of the nervous condition associated with these symptoms the cold shower bath was a remedy much neglected. Found in very few houses, its initial cost was not to be considered by those suffering from this condition. A further important matter was to eat "dry," no fluid being taken till the end of the meal.

SOME OBSERVATIONS ON THE ARTERIAL PRESSURE IN THORACIC ANEURYSMS.

By MURDOCH MACKINNON, M.D.Edin., D.P.H.Oxon.,
Casualty Physician, St. Mary's Hospital, late Medical Superintendent and Registrar, Seamen's Hospital, Greenwich.

THORACIC aneurysms are sufficiently uncommon among a list of patients one meets in hospital practice that the number of cases one has an opportunity of examining must be very limited. To collect, therefore, a sufficient number so as to form any definite conclusions, observations must necessarily be extended over several years. It is as yet too early to pass any opinion or to form any conclusions as to the effect of the treatment of syphilis by salvarsan on the number of cases of aneurysms that arise as a direct result of infection by the syphilitic virus. It will be interesting, when such observations can be made, to compare the average number of cases that occur annually with the average for a similar period of years before the introduction of salvarsan.

The important part played by syphilis in the causation of aneurysm is well known. Indeed, it is probable that if every case of aneurysm were closely investigated and the Wassermann reaction made, a positive result would be obtained in most, if not in all, cases. Absence of history of infection is always unreliable, and little importance must be attached to that. It is common knowledge that in parasyphilitic affections, such as tabes and general paralysis, patients often deny ever having contracted syphilis, the primary and secondary manifestations in such cases being so slight as to escape notice. In aneurysm, also, one not uncommonly meets with patients who in their own minds are positive no such infection occurred, and even in cases where the presence of a very trifling primary sore is admitted there is no evidence that secondary manifestations ever occurred. It appears, therefore, that these cases in which the primary and secondary manifestations of syphilis are so slight as to almost pass unnoticed are more subject in later years to grave parasyphilitic disorders, including aneurysms. The vigorous treatment to which of late years syphilitic patients have been subjected gave hopes of good results in the diminution of the tertiary and parasyphilitic manifestations; but it is very disappointing to see that not only are aneurysms as common as they were many years ago, but they appear to be even increasing in number.

This to some extent can be accounted for by the greater precision in diagnosis, with the aid of *x* rays and otherwise, of obscure cases of aneurysm with no physical signs. It is partly also due to the fact that in those very cases in which aneurysms occur the primary sore of the syphilitic infection was so slight that little or no treatment was adopted.

At the Seamen's Hospital, Greenwich, aneurysms of the aorta are very commonly met with. From 1889 to 1911 inclusive 154 cases of aneurysm were admitted to the wards, an average of 6.7 per annum. Taking the period of twenty years from 1892 to 1911 inclusive, it is very striking to notice that the total number of cases for the first ten years is 53, but for the last ten years 86.

In this paper I propose to deal more especially with the blood pressure in cases seen and attended to personally for the last three years. For this purpose observations were made on 40 cases while undergoing various forms of treatment, the diagnosis being made from the physical examination of the patient, and in any case of doubt corroborative evidence was supplied by the *x*-ray picture. All were aneurysms of the arch of aorta. The blood pressure was taken in each case just before or soon after admission, and daily observations taken in some of the cases for many weeks to note any change in the blood pressure following rest and treatment. The same sphygmomanometer (Martin's modification of the Riva-Rocci) was used throughout, and as far as possible each estimation of the pressure was taken at the same hour every day, with the patient lying flat on his back and the arms on a level with the body. In taking records of the pressure from both brachial arteries care must be taken that the armlet of the sphygmomanometer is evenly applied, and in exactly similar way to the immediately preceding one, and also that the patient be cautioned against moving to one or other side in the slightest degree while the pressure is being taken on the two sides. In this way difference due to movements of the patient or faulty position are obviated, and the conditions are as far as possible exactly equal on both sides.

It is no less important, for the sake of accurate comparison of daily readings, that the recording of the blood pressure be made by oneself in all cases with the same instrument, if found sufficiently reliable, as different observers and different sphygmomanometers vary in their estimations.

The blood pressure on admission was invariably found to be several millimetres higher than on succeeding days, the sudden fall of pressure being no doubt due to the rest in bed.

The average blood pressure in 32 out of the 40 cases was found to be below 150 mm. of mercury, and in only 2 cases did the pressure exceed 200 mm. Many of these, in addition, had advanced arterio-sclerosis, but in only a comparatively few of these had this any material influence in raising the average height of the blood pressure.

The presence, however, of arterio-sclerosis played a very important part in the variability of the pressure, which was so noticeable a feature in many of the cases, and in not a few was the main cause of the difference in the pressure on the two sides.

Sir Lauder Brunton estimates that in healthy individuals the average tension ranges as follows: In young men, 100–120; in middle-aged, 125–135; above 60 years, 145–150.

The average age of the 40 cases of aneurysm here recorded is slightly under 50 years, and the average blood-pressure in the majority of the cases is under 150 mm. mercury.

Judging from this, therefore, it is obvious that the blood pressure in the vast majority of cases of aneurysms is about normal. It is interesting to notice that the symptoms complained of by the patient, such as dyspnoea, cough, and pain, were much more severe on admission, when, as a rule, the pressure was high, and during the course of treatment, if from any cause the pressure was raised.

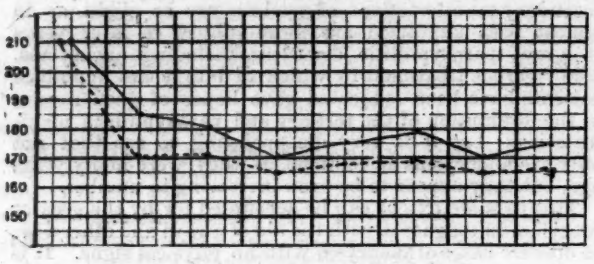

Fig. 1.

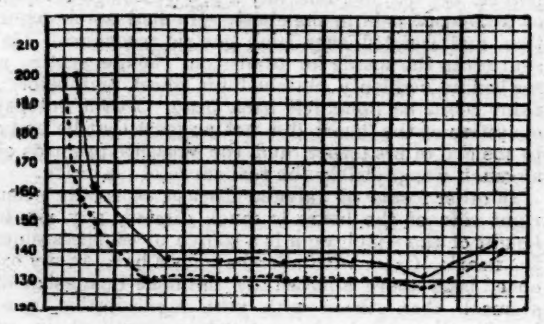

Fig. 2.

Figs. 1 and 2 are tracings from two cases of fusiform aneurysms of the arch of the aorta. Dyspnoea and cyanosis on admission much relieved by the reduction of the blood pressure following absolute rest.

In such cases the lowering of the blood pressure, whether by means of drugs or by venesection, gave instant relief to the patient; apart, therefore, from any influence it may have in promoting coagulation in the aneurysm, the lowering of the blood pressure in itself is of great value in the relief of the symptoms. It is unnecessary and often injurious to reduce the pressure too much, for then the rate of the heart-beat tends to increase and the condition becomes less favourable for the deposition of clot to occur. Sir John Rose Bradford, speaking of aneurysm, says:

> The essential thing to aim at is the lowering of the patient's tension, not because it is particularly high, but because the vessel which is the seat of the disease is giving way, and you naturally want to decrease the distending force, and your treatment must be directed to that end.

Daily variations of the pressure is a constant feature, especially in the cases with well-marked arterio-sclerosis, and I have seen the pressure varying from hour to hour, even in the space of a few minutes, while the pressure is being taken, the reading varied. Many examples of this could be given, but the following three cases are sufficient to show that the variation does occur.

Case I.—E. W. Arterio-sclerosis; dilatation of aorta; aortic regurgitation. Pressure readings, taken at fifteen minutes' interval: Right arm, 190, 185, 180, 185, 184, 184; left arm, 185, 180, 185, 182, 172, 172.

Case II.—W. E. Arterio-sclerosis; aortic regurgitation. Pressure readings: Right arm, 190, 160, 150, 155; left arm, 188, 155, 150, 155.

Case III.—F. M. Marked arterio-sclerosis; double aortic murmur. Pressure readings: Right arm, 154, 154, 150, 160; left arm, 154, 150, 144, 155.

When comparing the pressure in the two arms, then, a difference of pressure of 5 or even 10 mm. mercury is of no practical importance apart from its etiological significance. I have no doubt that the cause of the variation in many cases is nervousness and excitement. On several occasions when taking the blood pressure for the first time in a nervous and excitable patient who is uncertain whether the application of a band round his arm is meant to bleed or electrify him, I have found that the pressure in the first arm examined is higher by several millimetres of mercury than that in the other arm taken a few moments later. Taking another reading of both arms in succession some little time after, when the patient is assured of the innocence of the procedure, the readings are the same on both sides.

In other cases, however, a difference in the two sides of 5 to 10 mm. mercury persists and is not uncommon in aortic regurgitation with dilatation of the aorta and arterio-sclerosis. The greater this difference, the more likely is the case to be one of aneurysm.

O. K. Williamson, in an excellent paper on this subject, says:

> A distinct difference (at least 5 mm.) between the arterial blood pressure in the two arms is the rule in the majority of cases, and in about the same proportion of cases, on the one hand, of both aneurysms of the arch or ascending aorta and aneurysms of the innominate, and, on the other, of dilatation of the aorta, and a marked difference (at least 10 mm.) is equally common in both. Such differences, therefore, are of no value in the differential diagnosis between the two conditions. A great difference of at least 20 mm. seems to be likewise equally common in the two classes of cases, while a difference of upwards of 30 mm. speaks strongly in favour of aneurysm as against mere dilatation of the aorta.

Such difference in the pressure in the two arms certainly does occur in dilatation of the aorta, but my experience is that it only rarely amounts to 20 mm. and does not persist; one day the difference may be very great, while next day it is practically the same on both sides. On the other hand, I have found that a difference of 15 or more millimetres, which is constantly present, is strong evidence in favour of aneurysm. The history and *post-mortem* examination of the following case will serve to explain why the difference should occur:

A. H., seaman, aged 49, admitted to the hospital complaining of pain in the back and chest and huskiness of voice for four months.

The patient felt in very good health until five months ago, when he caught a severe chill, which developed into a cough, with some bronchitis; together with this he had an occasional stabbing pain in the side, which was at first intermittent in character, but latterly continuous. His cough got very troublesome, and his voice hoarse. He denied syphilis. On admission the voice was very husky, and he had a dry, brassy cough, but no expectoration.

In the chest a small round pulsating swelling is seen, occupying the space between the second and third costal cartilages on the left side, at the junction of the sternum. The swelling is about 2 in. in diameter. On percussion the right border of the heart is slightly outside the right border of the sternum, and there is a dull note over the manubrium, and continuing with the swelling on the left side, which is dull and convex, upwards and outwards towards the clavicle. The heart itself is not hypertrophied, the apex beat being in the fifth space in the normal position. No murmur. Second aortic sound loud and accentuated. Pulse, low tension, especially left radial. Right pulse weaker and slower than left. Pupils unequal; right dilated.

Progress.—The patient continued in this state, complaining a good deal of discomfort and pain in the back. Two days before he died the right pulse could hardly be felt. He died suddenly one day while sitting up in bed.

Autopsy.—Pericardium firmly adherent to pleura. Left pleural cavity filled with clear serous fluid. Parietal and visceral pleura adherent to apex and base of lung, and also firmly adherent to diaphragm. The right pleural cavity contained a large quantity of blood.

Heart.—Small, soft, and dilated. Left ventricle empty; right auricle full of *ante-mortem* clot.

Aorta.—Just above the valves of the aorta was a sacculated aneurysm of the ascending part of arch and a fusiform aneurysm of the transverse part of the arch. The aneurysm was lined with a thick fibrinous clot, blocking up almost completely the orifice of the innominate artery. The walls of the aneurysm were extremely friable and calcareous. It was closely adherent to the trachea and bronchi. Just above the bifurcation of the trachea there was a direct communication

between the posterior wall of the aneurysm and the trachea, the opening into the trachea being about ½ in. long. A tracing of the blood pressure is given below (Fig. 3), and shows the difference in the pressure on the two sides.

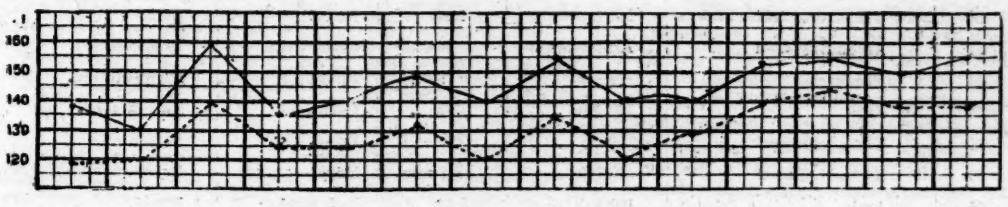

Fig. 3.—Sacculated aneurysm of ascending arch and fusiform aneurysm of transverse arch. Dotted line represents pressure in right arm.

From the *post-mortem* findings in the above case it can easily be seen how the pressure on both sides might differ.

In the case of aneurysms which do not show any difference of pressure there was no formation of clot or tendency to heal in the aneurysm. Difference in pressure, therefore, in the two cases is in itself an indication that the aneurysm is being filled with clot and tending to heal.

From the foregoing it is at once apparent that equality of the pressure on the two sides does not exclude aneurysm, but the presence of a constant marked difference of from 15 to 20 or more millimetres is a very strong evidence in favour of aneurysm.

The importance to be laid on digital examination of the pulse for any difference in pressure is extremely doubtful. On many occasions I have noticed that the pulses were found to be unequal by digital examination when by the sphygmomanometer no such difference was shown, and in other cases where well marked difference in the pressure on the two sides was shown by the sphygmomanometer, none was apparent to the finger.

From the 40 cases on which observations were made, it was found that 26 (65 per cent.) showed a distinct difference of pressure in both arms, while 14 had equal pressure.

Of the 26 cases, 12 had a difference of 15 or more millimetres mercury, the smaller pressure being on the aneurysmal side; 6 had a difference of 5 to 10 mm., and the other 8 had unequal pressure, but not more than 5 mm. Of the 26 cases which showed a difference of pressure on both sides, 16 only were noted as having difference in the pulses by digital examination, and in several of the 14 cases, where the sphygmomanometer showed the pressure to be the same on both sides, inequality of the pulse was recorded in the notes.

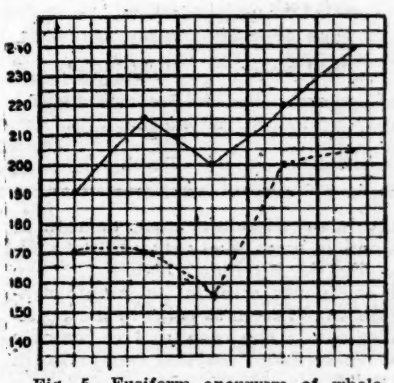

Fig. 5.—Fusiform aneurysm of whole arch of aorta, with marked calcareous degeneration. Right blood pressure much smaller than left. Died on the fifth day after admission.

A further point of diagnostic importance is that in cases with unequal pressures on the two sides the pupil on the side of the lower pressure was in the majority of instances dilated. This seems to be in accordance with the researches of Drs. Wall and Walker, who found that inequality of the pupils in aneurysms is due to inequality of the pressure in the ophthalmic arteries. They conclude that there are strong anatomical and physiological objections to the view that the inequality of the pupils which is often observed in cases of aneurysms is caused by some direct interference with the sympathetic nerve by the sac of the aneurysm. Evidence is as follows:

High arterial tension is associated with small pupils.
Low arterial tension is associated with large pupils.
Enlargement of the pupils is frequently associated with diminution of the temporal and radial pulses on the same side of the body.

In the treatment of aneurysms it is an unfortunate fact that the utmost we can expect in the majority of cases is a temporary improvement in the general condition of the patient and a relief of his symptoms for the time being.

Having at the same time in view the factors which promote coagulation in the aneurysmal sac, we aim at producing those which are favourable to the natural process of cure, and hope for the ultimate occlusion of the aneurysm. The means employed are absolute rest in bed for a prolonged period, restricting the absorption of liquid as much as possible, and the administration of drugs for the reduction of the blood pressure. It is very striking how quickly after rest in bed, and before the employment of any medicinal remedies, the patient's symptoms, such as

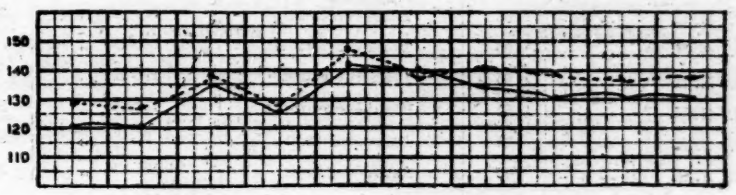

Fig. 4.—Fusiform aneurysm of arch. Under treatment with large doses of potassium iodide. No reduction of blood pressure.

pain, dyspnoea, and even cyanosis, are relieved concurrently with the fall of blood pressure.

In addition to rest in bed, which is one of the best means of relieving the patient's distress, it appears to be an invariable practice to administer potassium iodide in gradually increasing doses. Opinions differ as to the mode of action or even the therapeutic value of this drug in the treatment of aneurysms, but whatever way it operates, there is general agreement that it does relieve pain and gives the patient a feeling of comfort and ease.

In the great majority of cases potassium iodide is given with the object of inducing coagulation in the sac of the aneurysm by lowering the blood pressure. Professor Osler, speaking of the treatment of aneurysms, says: "Potassium iodide exerts a powerful influence on meso-aortitis, the primary lesion in the large majority of cases; and although it cannot, of course, heal a rent of the intima, and probably has very little effect in the sac itself, it relieves pain, promotes cicatrization of the aortitis, and favours coagulation in the sac by lowering the blood pressure."

Dr. Balfour, writing of aneurysm, says that "the curative effects of potassium iodide are mainly in its power of reducing the blood pressure."

This drug was given in every case of aneurysm admitted to the hospital, in doses varying from 10 to 60 grams three times a day, but in none of the 40 cases examined could any decrease in the blood pressure be attributed to iodide. Indeed, the reduction of blood pressure that was noticed occurred on the second day of admission in most cases, before any drugs were administered, and, as already remarked, this drop in the pressure was certainly due to the rest in bed. The tracings of the blood pressure subsequent to the primary fall show a steady pressure, with a daily variation of from 2 to 5 mm. mercury. In Figs. 3 and 4 the pressure, which was taken for many weeks while the patients were under treatment with large doses of potassium iodide, remains practically the same.

In a few instances potassium iodide had a depressing influence on the patient and produced irritability and restlessness, on account of which the administration had to be discontinued.

Stockman and Charteris, in a valuable series of experi-

No. and Initials.	Age.	Position of Aneurysm.	Average Blood Pressure.	Difference in both Arms.	Pulse.	Pupils.
1. M. S.	58	Transverse arch of aorta	135 mm.	None	Equal	Equal.
2. W. B.	51	Ascending arch	120–160 mm.	10–20 mm.	Right weak	Right dilated.
3. J. B.	48	Transverse arch and auxiliary artery	120–140 ,,	5 ,,	Equal	Right dilated.
4. J. A.	48	Arch	130–150 ,,	2–5 ,,	Left weak	Left dilated.
5. H. P.	56	Transverse arch	140 ,,	None	Equal	Equal.
6. H. H.	58	Ascending arch	120–140 ,,	5–8 mm.	Equal	Equal.
7. W. A.	49	Arch	150–160 ,,	5–10 ,,	Left weaker	Equal.
8. F. B.	54	Arch	120–130 ,,	3 ,,	Equal	Equal.
9. E. H.	59	Arch	110–140 ,,	None	Left weaker	Equal.
10. W. B.	52	Arch	110–120 ,,	None	Right weak	Equal.
11. R. G.	67	Ascending arch	140–150 ,,	5 mm.	Equal	Equal.
12. H. H.	38	Arch	170–175 ,,	5 ,,	Equal	Equal.
13. F. N.	42	Arch	80–100 ,,	5–20 ,,	Left weak	Equal.
Readmitted twelve months later	—	—	80–100 ,,	5–20 ,,	R. much smaller than left	Right dilated.
14. J. H.	38	Arch	170–190 ,,	5–15 ,,	Equal	Equal.
15. E. H.	41	Arch	120–125 ,,	None	Right weak	Equal.
16. W. A.	40	Transverse and descending arch	150–155 ,,	None	Equal	Equal.
17. E. C.	68	Transverse arch	170–240 ,,	20–50 mm.	Equal	Right dilated.
18. A. H.	66	Transverse arch	140–230 ,,	50–70 ,,	Right much smaller	Equal.
19. E. L.	63	Transverse arch	194–210 ,,	2–4 ,,	Equal	Equal.
20. G. H.	61	Right innominate	178–190 ,,	10–20 ,,	Right weaker	Right dilated.
21. T. A.	41	Ascending arch	84–154 ,,	50–60 ,,	Right very weak	Equal.
22. A. G.	40	Ascending arch	135–173 ,,	10–20 ,,	Equal	Right dilated.
23. J. B.	45	Transverse and descending arch	120–130 ,,	5 ,,	Left weaker	Equal.
24. R. S.	47	Transverse arch	86–146 ,,	30–50 ,,	Left hardly felt	Equal.
25. J. F.	55	Transverse arch	120–140 ,,	None	Equal	Equal.
26. W. J.	52	Descending arch	140 ,,	None	Equal	Equal.
27. M. W.	47	Ascending and transverse arch	120–130 ,,	None	Equal	Equal.
28. E. P.	44	Transverse arch	100 ,,	None	Equal	Equal.
29. E. F.	41	Transverse arch	80–100 ,,	None	Equal	Equal.
30. F. G.	41	Ascending arch	120–180 ,,	None	Equal	Equal.
31. E. B.	49	Ascending arch	120–150 ,,	2–10 mm.	Equal	Right dilated.
32. H. P.	62	Arch	130–140 ,,	None	Equal	Equal.
33. W. S.	35	Arch	130–150 ,,	10–12 mm.	Equal	Right dilated.
34. A. W.	57	Arch	150–200 ,,	30 ,,	Right smaller	Right dilated.
35. G. A.	62	Arch	120–140 ,,	10–15 ,,	Left weak	Equal.
36. A. H.	49	Ascending arch	120–140 ,,	15–20 ,,	Right very weak	Right pupil dilated.
37. E. W.	36	Transverse arch	120–130 ,,	5–10 ,,	Right weaker	Right dilated.
38. M. S.	60	Transverse arch	140–150 ,,	2–5 ,,	? Equal	Left pupil dilated.
39. R. M.	36	Descending arch	130–145 ,,	8–10 ,,	Equal	Right dilated.
40. B. B.	36	Ascending arch	130 ,,	None	Equal	Equal.

ments on the effect of potassium iodide on the blood tension and pulse-rate, administered for a prolonged period in doses varying from 15 to 180 grains per day, found that

potassium iodide, given to men by the mouth in therapeutic doses, does not modify the physical condition of the circulation, and that, therefore, it neither directly weakens the heart or dilates the arterioles.

From the result of their careful observations they concluded that

potassium or sodium iodide, when given by the stomach in ordinary doses, has no depressing effect on the action of the heart or on the blood pressure in the arteries.

The results of my observations on cases of aneurysm treated with potassium iodide are entirely in accord with this, for in none of the cases here recorded did any reduction of the pressure occur under its influence. Any curative virtue it may have, therefore, must operate in some other direction, and is most likely due to its anti-syphilitic properties. Dr. de Havilland Hall says "the excellent effect which commonly attends the administration of potassium iodide would seem to point to the possibility of a syphilitic element in the case, and to indicate the desirability of the Wassermann reaction being tried in every case of aneurysm."

From the result of treatment of the 40 cases here recorded, I am convinced that potassium iodide does not reduce the blood pressure in aneurysm, but that it relieves pain in many cases there is no question. Relief of pain can also be induced by other means, notably by the injection of sterilized solution of gelatine, a method of treatment first introduced by Lancereaux in 1904. Dr. Rankin, of the Seamen's Hospital, has used this method in many cases, and I had the privilege of examining the blood pressure in these cases while undergoing treatment. In no single instance, however, had the gelatine any effect

in reducing the blood pressure, as may be noticed from the accompanying chart (Fig. 6), but there was very

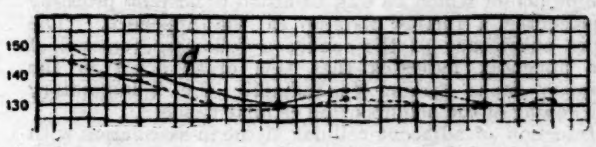

Fig. 6.

marked relief of pain in almost every instance where such symptom was a prominent feature at the commencement of the treatment.

Conclusions.

1. The blood pressure in aneurysm is usually about normal.
2. In about 65 per cent. of cases there is a difference in the pressure in both arms. In 30 per cent. of cases this difference is very marked, and is a valuable aid to diagnosis.
3. Reduction of the blood pressure is a great relief to the patient and helps towards the cure.
4. Potassium iodide does not reduce the blood pressure in aneurysms, but it is of great value in the relief of the pain.
5. The lower the pressure, providing the pulse is regular and of normal rate, the better the prognosis.

For the opportunity of studying these cases I have to express my best thanks to the medical staff of the Seamen's and St. Mary's Hospitals, and also to Drs. Joscelyne, Thackeray, and H. P. Potter, for seeing cases under their charge

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

TREATMENT OF METAL BURNS.

The following method of treating small metallic burns offers a simple and at the same time a satisfactory means of dealing with what often turn out to be very tedious sores.

A burn produced by a piece of hot metal is generally very slow to heal on account of the fact that in its passage to the skin the metal passes through dirty clothes, the infectiveness of which it is not able to destroy because it becomes rapidly cooled; its effect on the skin also is only partially destructive, leaving a large area of semi-destroyed cells and enzymes, which offer suitable pabulum for the micro-organisms transferred from the clothes by the passage of the hot metal, for while it may destroy some of these micro-organisms, it acts on the others as a stimulant, with the result that we invariably find an infected wound.

Any method which will at once interfere with and terminate the existence of the partially destroyed cells and enzymes on the one hand, and also make the conditions of life for the organisms too irksome on the other, must result in the production of a surgically clean aseptic wound.

At my suggestion one or two of the local works have adopted the following plan whenever a slight metallic burn occurs: As soon as the wound has been cleared of all macroscopic dirt a small quantity of petrol is sprayed on to the wound, which is eventually dressed with a dry dressing of iodoform gauze or a gauze with iodoform powder.

The idea underlying this method of treatment is that the petrol so alters the surface tension as to prevent the freed enzymes acting on the exposed cells and thereby giving rise to autotoxaemia; in addition, the petrol acts on the micro-organisms and so interferes with their surface tension as to prevent movement, subdivision and multiplication—in other words, growth.

Such conditions make for a clean, healthy healing surface, which is likely to heal up quickly, in contradistinction to the usually dirty septic ulcers that heal slowly.

Swansea. G. Arbour Stephens, M.D.Lond.

TEST FOR SACCHARINE SUBSTANCES IN URINE.

This test is performed on 5 c.cm. of urine containing sugar, with 25 c.cm. of sodium hypobromite in Gerrard's ureameter. The latter was so modified that a known quantity of urine could be added by means of a burette, the nozzle of which was passed through a second hole in the rubber cork of the bottle holding the hypobromite solution.[1] A thermometer is also inserted through a third hole in the rubber stopper. (1) In the absence of sugar the bottle just gets sensibly warm to the hand. (2) In the presence of sugar the bottle gets perceptibly hot. (3) The colour of the mixture in the bottle remains yellow in the case of non-diabetic urines, but in the presence of sugar its colour becomes distinctly paler or even quite white.[2] (4) In the absence of sugar the rise of temperature varies between 7° to 24° F., while in the presence of sugar the temperature may go up to 72° F. (5) In the presence of sugar to an amount of 0.25 per cent. and upwards a white crystalline precipitate is obtained after the liquid in the bottle has cooled to room temperature. The precipitate obtained is proportional to the amount of sugar present in the urine up to about 7 per cent. Under the microscope the crystals appeared in the form of needles about half an inch long, either separate or arranged in clusters in the form of double sheaves, single sheaves, brushes, stars, fans, etc. In quantities smaller than 0.25 per cent. no precipitate was obtained until the solution had stood for twelve hours or so, and then the form taken is that of opaque irregular masses, most of them round or triangular, with an internal striation commencing at the centre and radiating to the periphery, or even beyond the same at times. The precipitate obtained in such cases is very scanty, and in the form of isolated white minute points; it consists of an oxalate of soda, produced by oxidation of sugar by the hypobromite. (6) Similar results are also obtained in urine containing glycerine from 0.25 per cent. and upwards. This test has the great advantage of not requiring any additional apparatus or chemicals, and it can be performed at the same time as the routine method for the estimation of urea as at present carried out, with practically no extra trouble.

A. K. Turner, L.M. and S.,
Second Assistant Chemical Analyser to Government, Government Laboratory, Byculla, Bombay.

Reports

ON

MEDICAL AND SURGICAL PRACTICE IN HOSPITALS AND ASYLUMS.

HOSPITAL FOR SICK CHILDREN, GREAT ORMOND STREET, LONDON.

APPENDICITIS CAUSING PELVIC CELLULITIS IN A CHILD.

(Under the care of Mr. Tyrrell Gray.)

[Reported by Thomas T. Higgins, M.B., Ch.B.Vict., F.R.C.S.Eng., House-Surgeon.]

A male child aged 3½ years was admitted on July 27th, 1912, complaining of abdominal pain and the passage of blood and "matter" from the rectum.

The history given was as follows: Six months previously the patient had passed by the rectum a large quantity of blood and slime; since that time his general condition had been unsatisfactory. He had lost weight; had no appetite, and the bowels had become increasingly constipated. On July 24th he became worse, complaining of abdominal pain. Following the administration of a purgative, the bowels moved, and immediately afterwards a large quantity of blood and "matter" was passed. There had been no vomiting at any time, and no definite attacks of the ordinary appendicular type, though he had complained of "stomach-ache" at times.

His general condition on admission was fairly good; the temperature 103.6° F., and the pulse 160. The tongue

[1] The solution of hypobromite is made by adding 2.2 c.cm. of bromine to 25 c.cm. of a solution of soda made by mixing 100 grams of NaHO with 250 c.cm. of H_2O.

[2] The colour of the hypobromite is completely discharged when urine contains about 7 per cent. of sugar.

was coated with white fur, but moist. The abdomen was not distended, but movement of its lower half was limited. There was some rigidity and tenderness of the hypogastric area. A rectal examination was made, during which the presence of a very well marked post-anal dimple was noted. The rectum was found to be surrounded and tightly constricted by a firm nodular swelling. Under an anaesthetic an ill-defined hard mass could be felt in the infra-umbilical region of the abdomen, to the right of the middle line, apparently in connexion with the posterior abdominal wall about the level of the sacral promontory. Further examination of the rectum under anaesthesia showed the lumen to be constricted by a firm, nodular, extra-rectal swelling. No softened area was detected anywhere, and as high as the finger could reach the rectal mucous membrane appeared to be quite smooth, and not adherent at any place. The heart and lungs were normal.

Operation and After-History.

Mr. Tyrrell Gray operated on July 28th.

Anaesthesia having been induced by the injection of stovaine-dextrin solution, 1½ c.cm. into the spinal theca, the abdomen was opened through the right rectus. The terminal coil of the ileum was found firmly fixed in the pelvis and distended. Its peritoneal aspect was quite smooth and not adherent. The segment of mesentery attached to this coil was fully 1½ in. thick, and studded with enlarged lymphatic glands. The appendix was found adherent in the pelvis with its distal part firmly embedded in the retro-peritoneal tissue at the base of this thickened segment of small gut mesentery, near the middle line and at the brim of the pelvis. The pelvic cellular tissue surrounding the rectum was inflamed and greatly thickened, evidently constituting the extra-rectal swelling noted before operation. The case resembled a typical pelvic cellulitis as seen in women following parturition, and the retro-peritoneal swelling was so great that the finger could hardly be introduced into the pelvis through the abdominal wound. The lymphatic glands throughout the mesentery of the small intestine were enlarged. The remainder of the abdominal viscera were normal. Appendicectomy was performed with some difficulty, free oozing occurring from the acutely inflamed bed in which the appendix was lying. No pus was encountered at any stage of the operation. The appendix was about 2½ in. long, acutely congested, but not perforated. A small tube and gauze "wick" drain were inserted to the raw area, and the abdomen closed.

The tube and gauze were removed on July 31st, and the sutures on August 6th. No further passage of blood or pus from the rectum occurred, and recovery was uninterrupted. The child was discharged to the convalescent hospital at Beaconsfield on August 13th. The abdominal wound was quite healed, the bowels were acting regularly. On digital examination of the rectum the perirectal swelling was found to have greatly diminished, the rectal lumen approaching normal. The child was again seen on return from the convalescent hospital on October 3rd. His general condition was excellent. The bowels were moved daily without difficulty. The operation wound was sound, and nothing abnormal could be detected on examination of the abdomen. On rectal examination the main mass of thickening was found to have entirely disappeared, only a small narrowing remaining high up in the rectum.

REMARKS.

This case derives its interest from the remarkable degree of cellulitic inflammation present at the time of operation. It would appear that an initial attack of inflammation in the appendix, which had passed unnoticed, had served to fix it to the ileal mesentery in the position in which it was subsequently found. Infection of the mesenteric and later of the pelvic cellular tissue ensued. No doubt in the acute stage this was associated with actual suppuration, the resulting abscess discharging into the bowel, and so accounting for the passage of pus by the rectum.

The fixation of the terminal segment of the ileum in the pelvis was producing some degree of obstruction, as evidenced by the distended condition of this portion of the gut. The perirectal exudate further aided in disturbing the intestinal mechanics, and the result was expressed in the increasing constipation. The acute symptoms for which he was admitted to hospital probably represented a further flare-up in the appendix. The rapid subsidence of the condition following removal of the appendix indicates that this organ acted as the primary focus serving to maintain the inflammatory thickening of the neighbouring cellular tissue.

Infection of adjacent cellular tissue in association with appendicular inflammation is, of course, not unusual, but it must be rare to meet with it of such a nature as in this instance, where it was the predominant feature. I have been unable to find any similar cases recorded in the literature. Most writers only go so far as to say that such infection may occur.

Reviews.

FRACTURES AND DISLOCATIONS.

IF the popularity of a book can be measured by the rapidity in appearance of successive editions, Dr. STIMSON'S *Treatise on Fractures and Dislocations*[1] must rank high in the esteem of its readers. It is less than three years since we noticed the sixth edition, and now we have pleasure in calling attention to the seventh. Not many material changes have been made. The chief additions arise in connexion with treatment, especially of old dislocations and of recent fractures by operative means. In the former the work of Professor Dollinger of Budapest, which we enjoyed hearing of at the recent International Congress in London, receives a proper appreciation. He advocates reposition by open operation even after long intervals, and holds that this method surpasses conservatism in its results. In the latter the work of Sir W. Arbuthnot Lane is, of course, described and commented upon, and the author's views are interesting. It is obvious that he is by no means favourable to plating of simple fractures. The open operation should, he thinks, in fractures of the shaft of bones, be reserved for cases of marked and otherwise irreducible displacement, and that for the maintenance of reduction reliance should be placed upon external support without metallic sutures or pins placed in the bone; at the most a temporary silk or an absorbable suture may be used. He further suggests that all mechanical aids like wire or plates should be temporary only, and should not be used without the additional support of external splints. Direct fixation, however, is very rarely necessary. His great objection to internal fixation apparatus is that the presence of a foreign body, even if sterile, in bone at or near the line of fracture increases and prolongs the preliminary rarefaction of the bone. He has observed this in many instances, and exhibits skiagrams to show loosening of wires and of Lane's plates, and non-union of the fragments supposed to be held together by these mechanical aids. He is aware of Lane's reply to this contention, and admits that possibly in Lane's hands the operative treatment of fractures is perfectly satisfactory. But he argues that the practice ought not to be generally adopted simply because the manual dexterity and experience are lacking, and the rigid restriction of unnecessary exposure and damage to the tissues and the still more rigid adherence to aseptic detail would break down in the presence of difficulty in the operation, or "in the frequent absence of an equally strong conviction of their necessity."

Over one hundred new illustrations appear in this edition. Many of them are very good, but in a general view of the book we are disappointed with the crudity of many of the diagrams of apparatus and the haziness of many of the *x*-ray pictures, which look as though they belonged to the very early days of Roentgenology.

We venture to think that much more might have been made of fractures of the skull. The whole of that important section is dismissed in twenty pages. The author evidently has little belief in operative treatment,

[1] *A Practical Treatise on Fractures and Dislocations.* By Lewis A. Stimson, B.A., M.D., LL.D. (Yale); Professor of Surgery in Cornell University Medical College, New York; Consulting Surgeon to New York, Bellevue, St. John's and Christ Hospitals. Seventh edition, revised and enlarged. London: J. and A. Churchill. 1913. (Roy. 8vo, pp. 950, figs. 439, plates 39. 24s. net.)

though decompression is recommended in a half-hearted way. He does not appear to inculcate with sufficient emphasis the importance, in regard to operation, of temperature changes and blood pressure alterations in fracture of the base. He dismisses the subject somewhat airily by saying that it is the injury to the brain, and not to the bones of the cranium, that is of importance. We feel assured that readers will expect to find information on this variety of fractures commensurate with its importance, or at all events proportionate to the space given in the book to fractures in the limbs.

The second half of the volume is devoted to dislocations, and so far as we have searched, every conceivable form of dislocation is dealt with most fully. Not only are the commoner forms described, but references are given to every recorded instance of the rare lesions. And in that we find evidence of a vast amount of research; almost every page bristles with references. The great value of this work will be found to lie in this, that in addition to being a practical treatise it is a very complete work of reference.

GOUT.

Dr. James Lindsay's short book, *Gout, its Etiology, Pathology, and Treatment*,[2] is one of the Oxford Medical Publications, and is based upon the author's experience as Resident Medical Officer and Pathologist at the Royal Mineral Water Hospital, Bath. The book hardly aims at an authoritative position amongst standard works on this subject, but it gives an interesting analysis of the 600 cases that came under Dr. Lindsay's personal observation. His account of the very difficult problems of metabolism is scarcely satisfactory as Sir William Roberts's ingenious views are a little out of date. The author tells us that uric acid exists in the blood in the form of quadriurates, but a recent textbook states that "the existence of quadriurates is entirely a blackboard proposition," while Magnus Levy does not even mention these theories. Later on Dr. Lindsay gives the modern view of the origin of uric acid, yet he does not seem to recognize his inconsistency; it must, however, be admitted that the result of modern research has been to compel us to say for the present that the answers to the principal questions are unknown.

The theory of gout which apparently has most attraction for Dr. Lindsay is one of alimentary toxaemia in which the toxins are derived from some pathological modification of *B. coli*. The clinical descriptions are good, and are illustrated by some excellent skiagrams and photographs, for some of which the author expresses his indebtedness to Mr. Strangeways of Cambridge.

We are glad to see that Dr. Lindsay gives a much needed table of analyses showing the purin contents of most ordinary articles of diet taken from Walker Hall. He also provides a list of spas and bathing places, but his account of these is summary and hardly sufficiently eclectic to be much of a guide. He might have emphasized the value of purgative mineral waters, pointing out the types of gouty patients for which they are most useful, and also he would have been perfectly justified in showing in what way Bath offers advantages which give it a unique position amongst European watering places for the treatment of gout.

We should not have thought that either veronal or trional would be of value in relieving the sleeplessness caused by pain, and we think the author's condemnation of morphine far too absolute, as it is quite easy to ascertain the state of the kidneys if this complication is feared. In the treatment of gouty eczema where the itching is troublesome the remedies suggested are not such as would always afford relief. We look in vain for any preparation containing carbolic acid or tar.

Another inconsistency of the author is his constant prohibition of "red meat," although on page 174 he quotes, apparently with approval, Professor Walker Hall as pointing out that "white flesh contains as large a percentage of extractives as red meats." These inconsistencies and the alteration in the style of the latter part of the book, where the editorial "we" is substituted for "I" of the earlier chapters, suggest that it has been put together from papers written at different times, and has not been sufficiently revised to remove these divergences. Moreover, the proof reading might have been performed more carefully.

[2] *Gout, its Etiology, Pathology, and Treatment.* By James Lindsay. Oxford Medical Publications. London: Henry Frowde, and Hodder and Stoughton. 1913. (Cr. 8vo, pp. 224; 12 plates. 7s. net.)

LONDON PUBLIC HEALTH ADMINISTRATION.

The local government of London is a very complex subject, and Dr. Wanklyn, in publishing this summary of *London Public Health Administration*,[3] has done a service, not only to foreign visitors, but to all who take an interest in the health of London. The first chapter of the book, in which the author gives a list of the principal public health authorities with an account of their origin, is very interesting, more especially the passages in which he traces the evolution of those authorities. Against outside dangers there is the Port of London Sanitary Authority, a department of the City Corporation, which jealously guards the port of London from invasion by disease. The county of London itself is divided into twenty-nine districts, two of which are cities—London and Westminster—and twenty-seven boroughs, each independent of one another and practically of the central authority, the London County Council. Then come the thirty-one boards of Poor Law guardians, whose primary duty is to relieve the destitute, with a central authority, the Metropolitan Asylums Board, which cares for the fever hospitals and other institutions. The Metropolitan Water Board succeded the eight private water companies, and supplies not only London but a much bigger area with an adequate supply of good water. To show how up to date this book is Dr. Wanklyn includes the London Insurance Committee among the London public health authorities. The departments of the Imperial Government which are common to London and the rest of the country are also dealt with. In the second chapter we have in tabular form particulars of the services, principal legislation and authorities engaged in London government, and it is easy to see at a glance what each does. After this there is a chronological list of some of the Acts of Parliament connected with London public health administration. Their name is legion. To increase the usefulness of this small volume there is a good index. Altogether Dr. Wanklyn has crowded into sixty pages a large amount of valuable information in a very accessible form. In the introduction we are told that foreign visitors are apt to be confused by the complexities of this intricate subject, and we quite believe it; foreign visitors, however, have no monopoly of the confusion caused by the tangled web of the London government, part of which our author has successfully unravelled and placed before us in a handy and simple form. The Londoner himself is generally confused as to how, and by whom he is governed, and no wonder, considering the complexity of the subject. This complexity is to some extent the result of antiquity. All the confusion has grown up with us. The building was started without any plan, and on this delighful system it has been added to year by year, and the Londoner is bewildered. It must, however, be admitted that amid all the changes and confusion, slow but steady progress is being made, especially in the improvement of the health of London. By and by, when the people take more interest in their own well-being than in party politics, and will demand that health matters and simplicity of municipal administration shall be shelved no longer, the Government will be forced to give to a unified London better and healthier conditions of life.

TWO INDIAN TEXTBOOKS.

A fifth edition of R. Ghosh's admirable *Treatise on Materia Medica and Therapeutics*[4] has recently been published. The work has undergone thorough revision, and, while the original excellent plan of dealing with the various subjects included in the most extended signification of its title has been preserved, such modifications and additions as the most recent researches concerning drugs and other remedial substances and preparations render

[3] *London Public Health Administration: A Summary.* By W. McC. Wanklyn, B.A.Cantab., M.R.C.S., L.R.C.P., D.P.H. London: Longmans, Green, and Co. 1913. (Fcap. 8vo, pp. 60. 2s. 6d.)

[4] *A Treatise on Materia Medica and Therapeutics, including Pharmacy, Dispensing, Pharmacology, and Administration of Drugs.* By Rakhaldas Ghosh, L.M.S.Cal. Univ., Lecturer on Materia Medica, Calcutta Medical School. Edited by B. H. Deare, Lieutenant-Colonel, Indian Medical Service, Professor of Materia Medica, Medical College of Bengal. Fifth edition. Calcutta: Hilton and Co. 1913. (Crown 8vo, pp. 754. Rs. 5, or 7s. 6d. net.)

necessary have been made. For example, the subjects of serum therapeutics and organo-therapy have been fully and clearly presented in systematic and summary form. In reviewing previous editions of this book attention has been directed to the masterly manner in which the science of drugs—their source, composition, preparation, and action—has been set forth with such order, clearness, and conciseness as to commend its use by students and practitioners for purposes of study and reference. The task of preparing this edition has been ably performed by Lieutenant-Colonel DEARE, and it is interesting to observe that in this work of revision he has been assisted by the son of the author, Dr. B. N. GHOSH, who occupies the same appointment in the Calcutta Medical School as was held by his father. Dr. B. N. Ghosh has evidently inherited the parental power of assimilation and presentation as evidenced by the excellent *Treatise on Hygiene and Public Health*,[5] which in conjunction with Dr. JAHAR LAL DAS he has recently composed and published. There are so many excellent volumes dealing with this subject that a doubt as to the need of any fresh addition thereto might well arise. But nowhere is sanitation an old science, and in India it is perhaps the youngest branch of medicine to attempt to gain a hearing. Moreover, the application of its principles, which is everywhere somewhat unpopular with the world at large, is a matter of special difficulty in India, owing to the existence of innumerable ancient customs and habits of a kind different to those prevailing in Europe. Hence every facility and encouragement should be placed in the way of such medical men as desire to study the subject in its Indian as well as general aspects, and to endeavour to spread a belief in the value of sanitation in that country. On this ground alone the publication of a new volume dealing with hygiene from the Indian standpoint should probably be well justified, and the work under consideration has a still better claim. Its authors, after dedicating their book to the officers of the Indian Medical Service in recognition of their valuable work in the cause of sanitation, make ample acknowledgement to all previous writers on the general subject of hygiene, and finally state that they have endeavoured to make their own treatise concise, thoroughly reliable, and up to date. In this endeavour they seem to have been very largely successful. They do not discuss a good many by-issues to which space is commonly devoted in such books, but they cover the ground with considerable completeness, and, when necessary, deal with any special considerations arising out of the nature and habits of the country. Furthermore, they afford clear evidence that they are thoroughly versed in the most recent ideas on the subject, and expound both principles and their application in clear terms. The book therefore seems thoroughly to deserve the encomiums which Colonel KENNETH MACLEOD pays to it in the course of a very interesting introductory chapter.

MEDICAL ELECTRICITY.

THE appearance of yet another edition of Dr. H. LEWIS JONES'S *Medical Electricity*[6] must be gratifying not only to the author but, in a minor sense, to the reviewer. It is gratifying to the reviewer because, faced with the eloquent testimony of a sixth edition, he can safely suspend such critical faculty as he possesses, and congratulate the author upon the continued success of what was already known to be the best book on electro-diagnosis and therapeutics in the English language. The fifth edition was published in 1906, and an author less resolute than Dr. Lewis Jones might well have quailed before the task of extracting from the periodical literature of the last seven years whatever has relevance to his subject and is of permanent value. That he has accomplished it thoroughly is shown by the fact that nearly half the references are of a more recent date than that of the previous edition. A few pages have been added to the total number, and in the second part of the book two or three extra chapters, notably one on the affections of the joints, have been included amongst those which deal with the practical treatment of disease by electrical methods. The resources of electro-therapeutics for the treatment of joint injuries have lately been greatly strengthened by the use of ionization, upon which Dr. Jones speaks out of the fullness of his own experience. The first part of the book concerned with principles and apparatus—but here the reviewer must remount his pedestal, and express a regret, tinged, perhaps, with wounded vanity, that the few blemishes to which attention was drawn when the previous edition was noticed in this JOURNAL are unerased. A large number of illustrations remain, the necessity of which is not very evident, and, as before, many of the figures lose their value owing to the absence of any indication of scale.

The book is recognized as a standard work, and on the broad question of electro-therapeutics the new edition affords significant evidence, not only of wider applications, but of a more closely knit theory. On the foundation of a better understanding as to the mode of action of electrical currents, the reader is taken with a more confident step than was possible seven years ago to the therapeutic considerations which chiefly give to the work its great practical value.

[5] *A Treatise on Hygiene and Public Health.* By Drs. B. N. Ghosh and J. L. Das. With an introduction by Colonel Kenneth Macleod, M.D. Calcutta: Hilton and Co. 1912. (Crown 8vo, pp. 400. 5s.)

[6] *Medical Electricity: a Practical Handbook for Students and Practitioners.* By H. Lewis Jones, M.A., M.D. Sixth edition. London: H. K. Lewis. 1913. (Med. 8vo, pp. 567; 175 figures, 14 plates. 12s. 6d. net.)

NOTES ON BOOKS.

THE senior as also the least costly publication of a reference book order regarding philanthropic enterprise in London is *Low's Handbook to the London Charities*,[7] which makes its annual appearance in the third quarter of the year. Thanks to this fact, the information that it supplies is more up to date than that of its congeners, and on the present occasion relates to over 1,200 institutions. These in the text are arranged in alphabetic order, but in the index are conveniently classified according to their more special aims. A preface gives an interesting account of the Homes for Working Boys—seven admirable institutions, the first of which came into existence some forty years ago.

The first five of the ten volumes which form the annual issue of the *Practical Medicine Series*[8] deal respectively with general medicine, general surgery, the surgery of the eye, ear, nose, and throat, orthopaedic surgery, and gynaecology. The editors in chief are Professors GUSTAVUS HEAD and C. L. MIX, both of Chicago; each separate volume is written by a specialist in the subject with which it deals. The general aim of the series is to give a comprehensive account of all advances or work of importance done in various departments of medicine during the previous year. The reading of all the authors is not equally wide, but, taking the volumes as a whole, they constitute a not unsatisfactory epitome of the more important papers appearing during the period in question. Though published as a series the volumes may be obtained separately at varying prices.

LEOPOLD-LEVI AND H. DE ROTHSCHILD describe in their treatise, entitled, *La petite insuffisance thyroïdienne*,[9] a great variety of constitutional and local changes, which they attribute to inadequate action of the thyroid. The symptoms thus produced are for the most part such as are commonly observed in connexion with myxoedema, and differ only in degree. They do not, however, constitute a definite clinical picture for these reasons—that they are never simultaneously present in the same individual, and are, moreover, frequently complicated, as the result of hypothyrosis by the peculiar manifestations of either this group or by those of a perverted action of other glands of internal secretion, such as the hypophysis, the thymus, the suprarenals, the testicles, the ovaries, etc. The nature of the primary affection may be, it is said, inferred partly from the stigmata which hypothyrosis impresses upon the entire habit of the body, partly from appreciable lesions of the thyroid itself, though the proof of the correctness of that inference comes only from the success of thyroid medication. There is, of course, a good deal of hypothesis in all this; but if it be substantiated by critical observations, the authors will have rendered valuable service in calling attention to the diagnosis and proper treatment of many obscure clinical phenomena.

[7] *Low's Handbook to the Charities of London.* Seventy-eighth year of publication. London: Charles H. Sell. 1913. (Crown 8vo, pp. 250. Price 1s.)

[8] *The Practical Medicine Series.* Issue for 1913. Vols. i to v. Chicago: The Year Book Publishers. (Cr. 8vo. Price for the whole series, 10 dols.)

[9] *La petite insuffisance thyroïdienne et son traitement.* Par Leopold Levi et H. de Rothschild. Paris: Doin et fils. 1913. (Cr. 8vo, pp. 309 Fr. 5.)

THE LATE PROFESSOR EDWIN GOLDMANN'S INVESTIGATIONS ON THE CENTRAL NERVOUS SYSTEM BY VITAL STAINING.

PROFESSOR GOLDMANN contributed an important and original paper on "The Process of Digestion illustrated by the Action of Stains on the Living Tissues" in the *Lancet* of July 12th. Had his valuable life been spared a little longer he might have given to the English medical profession an account of his equally important Investigations on the Central Nervous System by Vital Staining. As he was kind enough to send me a copy of his paper[1] presented to the Prussian Academy of Sciences, 1913, I have carefully studied it, and, being of opinion that this work has a very important bearing upon the pathology and treatment of nervous diseases, and especially of such protozoal affections of the nervous system as sleeping sickness and syphilis, tabes and general paralysis, the so-called parasyphilis, I thought it would interest the readers of the JOURNAL to have a full abstract of this important contribution to medical science. The abstract has been made for me by Dr. Laura Forster.

F. W. MOTT.

Dr. E. Goldmann was induced to follow up his results in vital staining by another series of experiments owing to the observation that in all cases in which the injections were made subcutaneously, intra-abdominally, or with intravenous methods, the whole of the central nervous system, with the exception of the choroid plexus, remained absolutely unstained. In continuing his experiments he took into consideration the following questions:

1. Has the choroid plexus a specific function during fetal life, and what is it?
2. How does the epithelium behave towards vital stains?
3. A further problem was to determine the behaviour of the vital stains, and their pharmaco-dynamic effects according as they were applied through the circulation or by lumbar injection.

The experiments on the fetal plexus were carried out entirely in rats and mice, as the author's previous histochemical experiments had been most extensive in these animals in all stages of their development under normal and pathological conditions. Moreover, the small size of the animals made it possible to examine in one series of sections the whole fetus, together with the wall of the uterus.

As is well known, it has recently been shown that glycogen is a very important building material, and that, in spite of the fact that it is always found in the fetus, the central nervous system, except the choroid plexus, remains free from it. It is present, according to the author, in great abundance in the plexus epithelium.

Professor Goldmann used the carmine method in searching for glycogen, and found that as soon as development had advanced sufficiently for the differentiation of the choroid plexus glycogen could be detected. The plexus villi stood out as bright red places in contradistinction to their surroundings. Floating in the spaces of the fourth, third and lateral ventricles were detected bright red drops, a large number of which formed a continuous chain with the plexus epithelium. The cells of the latter showed their protoplasm full of red particles, drops and droplets, which sometimes covered the blue stained nucleus. Often the epithelial surfaces of adjacent villi lying close to each other were linked together by solid glycogen bridges. The plexus epithelium was marked off sharply from the adjacent ventricle epithelium. In addition to free drops of glycogen cast-off epithelial cells with their nuclei faintly stained were also found. Mitosis was also observed in the cells containing glycogen, which was a proof that the presence of glycogen was not a sign of degeneration. When the *Grosshirnbläschen* was fully developed, the amount of glycogen in the plexus of the lateral ventricles appeared to be greater than in that of the third and fourth.

The presence of glycogen in the plexus epithelium could be detected two or three days after the birth of the rats and mice. There would seem no doubt that glycogen is a most important building material for the central nervous system, and it should therefore cause no surprise that it has a position in the plexus epithelium. In the newborn and in animals up to fourteen days old it was always detected. On the other hand, in full-grown animals it was absent almost without exception. Yoshimura has found glycogen in the plexus epithelium of the human being at various ages, but he does not state whether his material was taken from healthy or diseased individuals.

It is of interest to recall that Claude Bernard, by means of Fehling's reaction, found in the cerebro-spinal fluid a substance which he took for grape sugar, and recently Mott's researches have shown that glucose is present in the human cerebro-spinal fluid under normal conditions in quantities varying from 1.2 to 2.5 in 1,000, and that these amounts are diminished in certain diseases of the nervous system—for instance, dementia praecox. These facts give increased importance to the presence of glycogen in the choroid plexus with regard on the one hand to the secreting activity of the plexus, and on the other to the glycogen content of the central nervous system.

In studying further the behaviour of the plexus epithelium towards the vital stains, Goldmann used the technique described in his earlier monographs.

After complete fixation and hardening of the brain in a 10 per cent. formol solution, frozen sections were made, and alum-carmine used as a nuclear stain. The animals examined were the frog, mouse, rat, guinea-pig, rabbit, dog, and monkey. In all these animals when the stain was introduced by means of intravenous, subcutaneous, or intra-abdominal injection, the same appearances were found—namely, vital staining of the plexus, and absence of stain in the rest of the central nervous system. If the animal had died in consequence of a toxic dose, or if the fluid was not examined till some time after death, it was often found to be slightly stained. In the plexus of the lateral ventricles and of the third and fourth ventricles, two different elements took up the stain—(1) the cells of the plexus itself, and (2) cells which belong to connective tissue of the plexus villi. These last resemble in form and size the large mononuclear lymphocytes.

Subarachnoidal injections of the vital stains were made into the lumbar sac or into the cranium. Any injury of the brain was carefully avoided. With the cord this was a more difficult matter, but could be best avoided in young animals in which ossification had not begun at the ligamenta interspinalia and intervertebralia.

It was found that a subarachnoidal injection of 0.5 c.cm. of a 0.5 per cent. solution was sufficient to cause the death of the animal (rabbit). In the dog it was found that 1 c.cm. of a 0.5 solution of trypan-blue injected under the dura caused severe spasms of the face muscles, but the animal was able to recover itself; in some cases where the injection was made several times during the course of a week no permanent injury was apparent. Serious disturbances arose only when the strength of the injections were increased to 2 to 2.5 c.cm. of a 1 per cent. solution; the animal died seventeen hours afterwards.

In one experiment on a rabbit 0.5 c.cm. of 0.5 per cent. and 1 per cent. solution of trypan-blue were injected into the lumbar sac. Immediately after death the brain and cord, together with the nerve roots and spinal ganglion, were taken out and fixed in a 10 per cent. formalin solution. Macroscopically the cord was dark blue in its whole extent. The nerve roots and spinal ganglia were somewhat paler than the body of the cord. The *Hirnstamm* was likewise dark blue. The stain was particularly deep at the base of the brain. The hemispheres of the cerebellum were paler in comparison.

In the rabbits in which an injection was made into the cranium the picture was the same, except that in this case the cerebral hemispheres were also deeply stained. The hardened specimens were cut with a freezing microtome, and gave the following picture of a transverse section of the cord. The leptomeninx was diffusely

[1] *Vitalfaerbung am Zentralnervensystem: Beitrag zur Physiopathologie des Plexus choroideus und der Hirnhäute.* Berlin. 1913.

stained blue. In the commissure, at the entrance of the blood vessels, and also at all places where lamellae of the pia enter the substance of the cord, the processes (or continuations) of the soft coats were recognizable by their blue stain. In many cases there was also vital staining of the glia network enclosing the nerve fibres. In the grey substance the staining appeared more complicated than in the white. The diffusely blue-stained ganglion cells of the anterior and posterior cornua were marked off distinctly from the paler ground substance. The nuclei of the ganglion cells were also stained. The protoplasma of the cell was so deeply stained as to make the structure unrecognizable.

In the brain sections also the blue staining of the soft coats and their processes into the brain substance was found. In parts of the cortex where the stain was intense vital staining of the glia fibres and cells was present, and the large pyramidals with their processes and deeply stained nuclei stood out very distinctly. In the cerebellum the cells of Purkinje were deeply stained.

In the dog, when the dose was large enough to kill the animal, the picture was similar, except that there was a much less extensive staining of the ganglion cells.

The dogs that received smaller doses and lived on were killed after several days. The macroscopic examination after the application of 0.5 to 0.8 of a 1 per cent. solution showed only one hemisphere stained, and sometimes just the convexity of that hemisphere. Only after the application of large quantities were both hemispheres stained. Microscopically, the pia with its processes into the brain substance were deeply stained. Everywhere the vessels were accompanied by vitally stained cells. Between the nerve substance and the vessel wall there was a wide lacuna, limited by cells containing the vital stain. These cells appeared to lie directly on the vessel wall. Their protoplasma contained peculiar vacuoles, which gave them a blown-out appearance. The cell membrane was blue, but the nucleus unstained. In these last experiments with the dog the staining of the ganglion cells was very limited, unless there was a lesion of the nervous system.

There was a great change in the picture under pathological conditions, such as inflammation, or such lesions as led to intracerebral haemorrhages. In such a case where the animal died spontaneously the coats were found considerably thickened, and, together with unstained polynuclear cells, numerous large mononuclear cells were found in which vitally stained granules and larger blue particles were present. These cells were in every respect similar to the pyrrhol cells described by Goldmann in his studies on the peritoneum, spleen, and lymph glands. From the above it would seem as if the distribution of the vital staining solution were similar to that described by Bruno and Lewandowsky for ferrocyanide and methylene-blue.

The vital stains reach the ganglion cells directly, penetrate them, and cause symptoms of irritation and then paralysis; this means the death of the cell; the stain penetrates the protoplasma, and causes that coloration which is an undoubted sign of the death of the cell.

As to the method of distribution of the stains, Goldmann stated that after lumbar injection the whole cord and brain stem, together with the optic and olfactory nerves, are deeply stained, while the cerebral hemispheres presented a very partial staining or remain unstained. When very small doses were given the stain was limited to the one hemisphere; the base, ventricle, or central canal were not stained. These appearances are in accord with Key and Retzius's description of the subarachnoid space as cisterns which surround the dorsal surface of the medulla and mid-brain. "From the large basal cisterns injected substances reach the surface of the cerebral hemispheres. First these substances are carried in the depth of the furrows (grooves), preferably in the neighbourhood of the blood vessels—that is, in the subarachnoid canals of the same, then they rise with the vessels to the surface, gradually filling the neighbouring places."

For these facts, as for the continuation of the subarachnoidal spaces into the lymph canals of the higher sensory nerves and peripheral nerves, "vital injections" have afforded strong confirmatory evidence. Goldmann's microscopic examinations confirmed without doubt the connexion (as shown by Key and Retzius) of the perivascular spaces of the brain and cord with the subarachnoid spaces. The staining of the cells of the perivascular spaces affords an important histological means of following up the continuation of these spaces into the periganglliar spaces. It is well known that the idea hitherto accepted has been that those intracerebral and intraspinal processes (*Ausläufer*) of the subarachnoid space which present themselves as perivascular lymph spaces have a blind ending at the point where the smallest veins and arteries pass into the territory of capillaries. Mott has shown already (particularly with regard to the tying of the large vessels of the neck) that in the brains of such animals there are periganglliar spaces which communicate directly with the perivascular spaces of the capillaries. According to Goldmann's results, there can be no doubt that when vital staining of the ganglion cells is produced by a subarachnoid injection, the stain reaches the cells directly by means of the perivascular spaces and by the paths described by Mott. This is a fact of great importance in its bearing on the question how far the cerebro-spinal fluid represents the lymph.

From the above Goldmann drew the following conclusions: Vital stains possess an affinity for the nervous system, and specially for the ganglion cells. If they are introduced by means of subcutaneous or intravenous injections, they are kept back by the plexus. If they are introduced into the cerebro-spinal fluid, they can spread through the whole of the nervous system, and show their toxic effect by the destruction of numerous ganglion cells, which they reach by way of the perivascular continuations of the subarachnoid space through the cerebro-spinal fluid.

Two questions arise: If absorption of the stains occurs, do they reach the lymph or blood vessels first? Does this absorption take place quickly or slowly?

Goldmann's experiments have solved these questions only in part, for the simple reason that, owing to the serious toxic effects of the stains, they could only be used in small quantities. The small quantities are distributed rapidly in the nervous system, and remain there for the most part, and only very minute particles, hardly to be recognized by the usual methods, leave the subarachnoid space. Only in those dogs which received an injection of 2 to 2.5 c.cm. into the cranium was the stain found in the deep lymph glands of the neck. This is in accord with the results of Mott and other authors. The latest investigations of Hill, Cushing, Reiner, Schmitzler, and others tend to prove that the cerebro-spinal fluid flows directly into the circulation by way of the longitudinal sinus to the vena jugularis. Goldmann formed the impression that in the experiments of these authors large quantities of fluid under pressure were used which do not give a parallel to the natural way. In using such injections into delicate tissues, it is very easy to cause ruptures of the vessels, which may lead to false conclusions. In Goldmann's experiments, the conducting of the stained solution was a vital process, and therefore some physiological importance should be attached to it. Vital staining offers a wide field for discovering the communication channels for the cerebro-spinal fluid.

Quincke and Sicard have pointed out the great differences that exist in the subarachnoidal space with regard to the absorption of true solutions and emulsions. Even the finest suspended matter is distributed gradually through the stream of liquid in the nervous system. But the interesting phenomenon is observed that freely suspended bodies very soon disappear from the liquid, as they are taken up by the phagocytes, and reach the brain coats to be deposited in the form of granules. Such minute foreign bodies are not, as a rule, drained off in the general lymphatic channels. When Sicard injected into the subarachnoidal space of the dog very fine emulsions of oil with Chinese ink, he could detect drops of oil four or even nine months later in the lateral ventricle or in the tissues of the pia.

Goldmann doubted whether leucocytes alone act as phagocytes of undissolved products in the cerebro-spinal fluid. His experiments led him to suppose that the "pyrrhol" cells play an important part in this, as he found them in great numbers in pathological conditions of the brain and its coats. Mott and Spielmeyer, in discussing their histological researches on the perivascular changes, especially in chronic meningo-encephalitis, have called

attention to special cell elements which appear to correspond very closely to the "pyrrhol" cells of Goldmann.

Everyone who compares Spielmeyer's illustration (Plate 5, fig. 5) with Goldmann's picture of the "pyrrhol" cell will not doubt the identity, and Goldmann had no doubt as to their origin. He considered them to be normal constituents of the brain coats and their intracerebral, intraspinal, and intraneural continuations. By the demonstration of this fact he considered that the "anatomical and physiological" relation of the leptomeninx with the serous coats, more especially the peritoneum, was proved. Thus the leptomeninx possesses a phagocytic action *par excellence* with an extraordinary chemiotactic irritability (*Erregbarkeit*). It is distinguished histologically by its capacity of storing up vital stains.

The experiments of Quincke, Sicard, and others on the fate of minute foreign bodies in the subarachnoidal space have a further practical importance. We know that the prognosis in trypanosomiasis ugandensis is made more serious by the detection of trypanosomes in the cerebro-spinal fluid. Sicard has pointed out how the action of the cerebro-spinal fluid differs according as it acts on parasites *in vitro* or *in vivo*. ("Peut-on conclure de ces propriétés bactéricides constatées—*in vitro*—à l'action de ces mêmes propriétés—*in vivo*? Nous ne le pensons pas, les expériences faites sur les animaux démontrent le contraire. Nous verrons, par exemple, avec quel rapidité meurent les chiens inoculés par la voie sous-arachnoidienne avec du pneumocoque, du charbon ou du bacille tétanique.")

So it is with sleeping sickness. If the parasite reaches the subarachnoidal space it can carry on its toxic activity leading to chronic meningo-encephalitis. Dr. Mott even holds the opinion that a reinfection of the blood can start again from those trypanosomes which remain protected in the cerebro-spinal fluid; and he says that "the only case of trypanosomiasis ugandensis which to his knowledge was cured concerned a patient in whom, three years after the infection, no parasites could be detected in the cerebro-spinal fluid. He never showed a sign of sleepiness." Five years after the infection he died of pneumonia, and the autopsy revealed no signs of a meningo-encephalitis.

In conclusion, Goldmann wrote that he would not enter into the question as to whether the cerebro-spinal fluid was lymph fluid or not, as this had been discussed very thoroughly by Mott, Lewandowsky, Blumenthal, and others. Goldmann's experiments have taught us two things. From the plexus choroideus the cerebro-spinal fluid receives important metabolic products, which are carried to the nerve substance by the fluid. Further, the plexus possesses the power of protecting the fluid, and in this way the nerve substance, from the penetration of toxic substances. We thus arrive at a correct understanding of the peculiar composition of the fluid as compared with the other fluids of the body, which enables it in such a perfect manner to bring nourishing products to the nerve substance, and at the same time to keep out harmful ones.

It is, therefore, not surprising that in the lowest and highest animals the choroid plexus begins its function at an early stage.

ONE HUNDRED YEARS AGO.

The Royal College of Physicians and its Presidents in 1813.

On the sixth day of October, 1813, Sir Francis Milman, M.D., resigned the presidentship of the Royal College of Physicians, and was succeeded in the presidential chair by Dr. John Latham. No doubt there were the customary regrets expressed and the usual congratulations offered in connexion with the two events; and then the work of the College went on again as before, save, of course, that the new president's individuality, invisible in the big decisions of the chair by reason of the stereotypism inseparable from that office, showed itself in the personal mannerisms and tricks of speech which every man has, but which few men suspect themselves to possess. Let us see whether we can, in some degree, look into the medical life of the time and form some mental pictures of the men of these days and the manners, for, as the Latin proverb has it, "ubi homines sunt, modi sunt" (where there are men there are manners).

But, first, let us fix the *venue*. The Royal College of Physicians in 1813 was not yet in Sir Robert Smirke's fine building in the space between Cockspur Street and Pall Mall East, looking into the latter and in the North-West corner of Trafalgar Square—indeed Trafalgar Square itself was not, until 1830; the physicians were still in Warwick Lane, in the edifice erected by Wren (begun in 1671 and opened in 1679), into which the Fellows of the College, driven out of Amen Corner by the ravages of the Great Fire (1666), had moved. In Warwick Lane they had been for a hundred and forty years or so, and there they were to remain for some ten or eleven years more. It was a great building, capacious, convenient, handsome, even imposing; its dome had looked down on many notable physicians pacing along the lane which joined Paternoster Row with Newgate Street; and within its walls there had been enacted great events. Some of the events had been regretted afterwards, such as that trouble with the apothecaries when the profession split up into dispensarians and anti-dispensarians; and even the dome had been written of by Garth with hardly the respect and honour it merited. Sir Samuel Garth, in his poem, *The Dispensary*, whilst satirizing the apothecaries, and after a passing allusion to the Old Bailey (not far away), thus described the "octagonal domed entrance-porch, forty feet in diameter":

> Not far from that most celebrated place
> Where angry Justice shows her awful face,
> Where little villians must submit to fate,
> That great ones may enjoy the world in state,
> There stands a dome, majestic to the sight,
> And sumptuous arches bear its oval height;
> A golden globe, plac'd high with artful skill,
> Seems to the distant sight—a gilded pill.

But, take it all in all, the College was a great building, and the Fellows had a long and honourable past to look back upon when, in October, 1813, they gathered to bid farewell (officially) to Sir Francis Milman and to welcome Dr. John Latham.

They were still meeting in Warwick Lane, but they were beginning to be restless there, for whilst the College was all that could be desired, its situation was not. Munk[1] says that since its erection great changes had taken place in London, and especially in the City. "The immediate neighbourhood of the College had greatly deteriorated; the population and fashion had gone westward, and the situation of the College—always bad, and the only approach to it through Warwick Lane, narrow and difficult—became year by year more inconvenient." The desirability of the removal of the College to a more convenient situation was in 1813 very evident to all; indeed, several attempts had already been made to get on the move, but thus far with no result. It was during Dr. Latham's presidentship that the first definite step was taken in the direction of Pall Mall, although it was not till the coming of his successor, Sir Henry Halford, that the site there was actually secured. The matter, at any rate, was exciting interest among the Fellows at the close of 1813, and in 1814 the College "petitioned for and succeeded in obtaining from Parliament an Act to enable it to hold its corporate meetings and exercise its powers within the city of Westminster and its liberties." Little more was done during Dr. Latham's occupation of the chair (1813–1820), but Sir Henry Halford immediately began to make progress, and soon after his election as president got from the Crown a grant of the ground in Pall Mall East on which the College now stands for a lease of 99½ years. Had no alteration in these terms been made, the Fellows would now be facing the termination of their lease within a few years; but in 1864 an Act of Parliament was passed to enable Her Majesty Queen Victoria to grant a lease of the building and site for 999 years. The College authorities of to-day, therefore, need not yet begin to fret about their habitation for the future. This security of tenure, however, was not dreamed of, far less within sight, in 1813, and Dr. Latham and his treasurer, Dr. Richard Budd, and Dr. Budd's successor, Dr. George William Maton, had no clear vision of how they were going to get out of narrow, twisting Warwick Lane or of what more spacious situation they were to reach.

The new president was a Cheshire man, and was

[1] Munk, W., *The Roll of the Royal College of Physicians of London*, vol. iii, p. 333, 1878.

approaching the close of his 52nd year; his predecessor, Sir Francis Milman, Bart., was a Devonshire man, and fifteen years his senior; both had a clergyman for father, and were therefore "sons of the manse," as they say in Scotland. Both were Oxford graduates, the former a member at Brasenose and the latter of Exeter College.

Sir Francis Milman was admitted a Fellow of the Royal College of Physicians in 1778; but apparently just about that time he was nearly lost to medicine and gained by the Church, for he took the degree of bachelor of divinity at Oxford on November 10th of that year, and soon thereafter resigned his appointment as physician to the Middlesex Hospital. The intention, however, was abandoned, and he is found to be, in 1785, physician extraordinary to the King's household; and then, having, so to say, put his foot on the ladder, he is seen mounting steadily—physician to the household, physician extraordinary to the King, physician in ordinary to the Queen, and, in 1806, physician in ordinary to the King. He was created a baronet in 1800. If Sir Francis at any time regretted that he did not leave medicine for divinity he must have been consoled to some extent by the fact that he lived to see his third son (Henry Hart Milman) take orders (1816); in that year also a grandson was born (Robert Milman), who was in time to come (1867) to be bishop of Calcutta. Henry Hart Milman, also, rose high in the Church, being made dean of St. Paul's by Lord John Russell in 1849; he was known as "the great dean," and he is now remembered for many of his literary undertakings. He wrote a *History of Christianity under the Empire*, which was ignored by the clergy; edited *Gibbon*, an almost impossible task, published the *Life of E. Gibbon, Esq.;* and composed his *History of Latin Christianity;* but his earliest historical work, the *History of the Jews* (1830), is his most memorable achievement, for through it he has entered that modern temple of honour in literature, the Everyman Library of a thousand volumes. Of these happenings, however, Sir Francis Milman had no foreknowledge in October, 1813, as he gave way to Dr. Latham, his successor to the presidential chair; but we may fancy, if we choose, that we can trace some hereditary foreshadowing of his son's coming historical fame in the fact that in Sir Francis's work, *An Enquiry into the Source from which the Symptoms of the Scurvy and of Putrid Fevers arise*, "almost the only original passage," to quote Dr. Norman Moore,[2] "is one in which he comments on a passage of Strabo, and shows that the disease from which the army of Aelius Gallus suffered in Arabia in the reign of Augustus was a form of scurvy." Soon afterwards the baronet retired to his seat, Pinner Grove, Middlesex, where he died in 1821, in his seventy-fifth year. "He was a courtly person, of no great medical attainments," says Dr. Norman Moore.

Let us turn to Dr. John Latham, the incoming president, under the octagonal dome in Warwick Lane. To many of the Fellows, and especially to such as delighted in the classics and indulged, as was the custom, in allusions to mythological matters, the new president must have seemed a very phoenix, in the second cycle of his life, emerging from ashes with renewed youth. There was reason for their thought and a basis for the comparison. After a short time in practice in Manchester and Oxford, Dr. Latham had gone to London in 1788; he was soon physician at the Middlesex Hospital, and at the Magdalen; and in a few years he was physician to St. Bartholomew's (1793). He was admitted a Fellow of the College of Physicians in September, 1789; was Censor in 1790, 1794, 1801, 1803, 1807; was Gulstonian Lecturer in 1793, Harveian Orator in 1794, and Croonian Lecturer in 1795; and he was Elect from July 4th, 1806, till August 11th, 1829. His growth in the respect and confidence of the Fellows had been rapid, but he had done even more than has been enumerated, for in 1792 he undertook the arrangement of the library, which had been suffered to fall into disorder, and, as we shall see, had contributed numerous papers to the *Medical Transactions* published by the College. But Dr. Latham was no bookworm; he had a large and lucrative practice, had been appointed physician extraordinary to the Prince of Wales in 1795, and carried on his numerous activities in Bedford Row.

Between 1802 and 1807 there were signs that Dr. Latham's immense labours were telling upon him. Here is the story as it was told by his second son, Peter Mere Latham[3] (in 1843). "Half a century ago there were three physicians of St. Bartholomew's Hospital, who, each in succession and each early in life, and unaided except by their own strenuous industry and talent, ran a rapid career of success. These were Dr. David Pitcairn, Dr. Austin, and Dr. Latham. The fortunes of all three were peculiar and instructive. Dr. Austin, in the midst of great business and the brightest prospects, was cut off by a fever at the age of 40. Dr. Pitcairn, between 40 and 50, had his prosperity arrested by haemoptysis, and retired to Lisbon in search of health. He returned to a less practice but an undiminished reputation, and died about his 60th year from acute inflammation of the larynx. Dr. Latham, at the age of 46 (1807), was worn out by the hard labour of his early success. He was believed to be consumptive, and retired into the country (it was thought) to die. But he recovered, and returned to town, and resumed the exercise of his profession." He had resigned his hospital physiciancy in 1802, and it can readily be imagined how, in 1807, when he began to spit blood, the household in Bedford Row was thrown into consternation, and with what expressions of regret Dr. Latham's breakdown was received by his friends in the College; and so he went off to his country estate at Sandbach, "it was thought, to die."

Then came the phoenix-like rebirth and rejuvenation. In two years he was recovered, and was back in town once more, not now indeed in Bedford Row, but in Harley Street; his old patients gathered round him, "and here for twenty years he enjoyed with a more moderate practice a larger share of health than he had known during the days of his greater labour and greater success." Finally, in 1829, he left London, but even then fourteen years of life were still before him. "For two thirds of this period," as his son wrote, "he enjoyed the comforts which are still within the reach of vigorous old age; for the last third was reserved the sharpest of all bodily afflictions, the formation and gradual increase of stone in the bladder." Under this he died in 1843, at Bradwall Hall, in his native county of Cheshire, to which he had gone in 1829. It was, however a wonderful rejuvenation, and we can think of some of the Fellows in the College who knew the whole story saying to each other in October, 1813, "See our phoenix-bird president," and quoting perhaps with a fine ring Dryden s lines:

> All these receive their Birth from other Things;
> But from himself the Phoenix only springs:
> Self-born, begotten by the Parent Flame
> In which he burn'd, Another and the Same.

Reference has been made to Dr. Latham's rearrangement of the books in the library of the Royal College of Physicians in Warwick Lane, but he was a writer of books as well as a custodian of them. His work on *Diabetes* was published in 1811; in it he supported a dietetic treatment, and supplied long extracts on the disease from the Greek authors and from Willis. Two earlier works were *A Plan of a Charitable Institution to be Established on the Sea Coast* (1791), and *On Rheumatism and Gout* (1796). The last-named work was in the form of a letter to Sir George Baker, Bart., who had been nine times President of the College between 1785 and 1795, and who made the discovery that Devonshire colic and colica pictonum were forms of lead poisoning (with much loss of local favour in his native county of Devon). As an example of Dr. Latham's literary style the opening sentences of his letter to Sir George may be quoted:

> Dear Sir,
>
> The liberty which I take of addressing you on the present occasion, very naturally arises from that indulgence which you have always shewn to me, and from the opportunity which, both as President of the College of Physicians and as a private gentleman, you have constantly granted for freedom of communication. Easy access very often invites intrusion; and, therefore, if your doors have been open and I have not denied myself the satisfaction of walking in, you must lay to that account the visits which I have sometimes made you, and blame yourself alone for the interruption. I know not, however, whether at this time I ought to presume to consider myself as a welcome visitor, since the subject which I shall propose for your examination (and on which I shall ultimately hope for your approbation) will be an attack upon old opinions—in which, perhaps, I shall find you fortified by numbers

[2] *Dict. Nat. Biogr.*, xxxviii, p. 1, 1894.

[3] *London Medical Gazette*, n.s. ii, p. 212, 1843.

against me; but which I conceive to have been defended by a supposed impracticability of the approach, rather than by any real strength of the fortress.

One feels inclined to say "gracefully put and well rounded," and to feel that Sir George Baker would have been inaccessible if he had not responded to so delicately expressed and so courteous an invitation to "candid discussion and calm investigation." Dr. Latham's views were, indeed, rather revolutionary; he thought that neither acute rheumatism nor gout should be placed with the inflammations; the seat of these diseases was "established in the minuter series of lymphatic vessels." Gout was not hereditary, and an attack of it was never beneficial.

The eighty pages of the work on rheumatism and gout do not form very interesting reading, and one turns with greater hopefulness to Dr. Latham's shorter contributions to the *Medical Transactions* of the College. These *Transactions* had begun to appear in 1768, when the first volume was published; during the ensuing seventeen years two more volumes were produced; a period of silence of twenty-four years followed, and then, in 1813, another volume came out. In this fourth instalment Dr. Latham took the most prominent place with five contributions, and it is not unlikely that it was largely through his exertions that the issue not only of the fourth but also of the fifth and sixth volumes was made practicable; at any rate, no more appeared after the close of his presidentship. The subjects dealt with by him in the fourth volume included tetanus (Dr. Latham recommending relaxant medicines, especially pulvis ipecacuanhae compositus in large and repeated doses), tumours which have been mistaken for disease of the liver (for example, "schirrous pancreas" and enlargement of the ovarium), certain symptoms usually but not always denoting angina pectoris (symptoms which in reality were occasioned by disease seated in the abdomen), and abdominal tumour originating in lumbar abscess. All these contributions were read at the College before the date of Dr. Latham's elevation to the chair. Just before and immediately after his election as president he contributed three papers, and these appeared in the fifth volume; another was published in 1815, and one each in 1818 and 1819 (in the sixth and last volume). The subject dealt with just before Latham's election was "leucorrhoea," and in this article, better, perhaps, than in any other, one sees the long distance medicine, and particularly gynaecology, has travelled in the last hundred years; of diagnosis there is almost none, the writer deploring the frequent omission of vaginal examination; for treatment, mention is made of "mild diluent injections of tepid water," and the cure is to be confirmed by mixing with the water "some slight astringent either of the vinous, the vegetable, or the metallic kind." The president was more happy in his communication the "medicines usually given in worm cases, with remarks npon the collateral advantages sometimes derived from them in cases of epilepsy"; this was read at the College on November 15th, 1813. A favourite application in the hands of Dr. Latham seems to have been the liquor plumbi acetatis dilutus, for he gave it in leucorrhoea (apparently in cases of cancer of the cervix uteri) and in the condition called cachexia aphthosa; he used the superacetate of lead in consumption. To the modern mind one of the most striking features of Latham's contributions, and indeed of all the papers in these *Transactions*, is the slenderness of the clinical materials upon which far-reaching conclusions were based. If one reads them over and then turns to any week's issue of this JOURNAL, for instance, one cannot fail to be impressed with the progress, in this respect at least, accomplished in one hundred years.

The president was fond of books, there can be no doubt of that, both before and after his phoenix-like rejuvenation; and it is a matter of more than passing interest that all his three sons drove the pen. His second son, Peter Mere Latham—Mere was the maiden name of Dr. Latham's wife—followed in his father's steps in medical practice, but he also gained the Chancellor's prize at Oxford for Latin verse on Corinth, and there are preserved in the library at St. Bartholomew's Hospital sixty folio volumes of his notes of cases. His eldest son, John, a friend of Reginald Heber, was the writer of poems which have been described as graceful and reminiscent of Cowper; and his third son, Henry, who was first a barrister and afterwards entered the Church, had a lifelong taste for classical studies, and published in 1863 Latin translations from Shakespeare.

One thinks of Dr. Latham as a man giving all his spare time to the Royal College of Physicians—a familiar figure, therefore, in Warwick Lane a hundred years ago, with not a little literary grace in his writing; not very brilliant, perhaps, in his management of his medical cases, but courtly, kind, sympathetic, giving confidence and encouragement, and calling forth esteem and even affection. "More, therefore," said his son, writing in the year of his death, "need not be said of Dr. Latham, except that he was singularly temperate, when temperance was hardly yet thought to be a virtue; he was pure in life and conversation, when to have been otherwise would have provoked no censure; and he was not ashamed to be religious when religion had yet no recommendation or countenance from the world." So we bid him farewell as he was in 1813, enjoying that second cycle of full years of life, looking forward to many happy and useful days yet "beneath the stars—and above them."

THE OPENING OF THE WINTER SESSION.

OF late years the first of October has lost some of its importance as a date in the medical year. It is no longer almost solely at this date that students commence their medical career; considerable numbers join the schools at the beginning of the summer term. Besides this, the number of recognized special departments of medicine has increased, and the organization of these, as also of general ward work for teaching purposes, has been vastly elaborated, with the result that a very much larger proportion of students remain up during some part of the long vacation than was formerly the case. This is no doubt one reason why first of October ceremonies have fallen largely into desuetude. With rare exceptions the provincial, Scottish and Irish schools now commence their work without any fanfare at all, most of them marking the commencement of the winter session simply by opening the doors of their anatomy rooms during the first week of October, and commencing formal lectures at varying dates thereafter. This has been the case this year, and the present week has witnessed a more or less definite commencement of winter work not only in London but throughout the United Kingdom.

There have, however, been certain exceptions to the absence of inaugural ceremony, and addresses given by Professor Sherrington at Leeds and by the Director-General of the Indian Medical Service at the London School of Medicine for Women will be found elsewhere in this issue. At Birmingham the dean and the faculty of medicine gave a conversazione, whereat Professor Arthur Keith reviewed the present state of knowledge regarding the antiquity of man and the problems that remain to be solved. At St. George's Hospital there was a prize-giving ceremony, at which Sir William Osler played the leading part. At Charing Cross Hospital there was a corresponding event, the prizes being distributed by the Lady Wantage, and an important address on the subject of university medical education in London, delivered by Dr. William Hunter. This too will be found in full in the earlier pages of this issue. The other schools for the most part contented themselves with the holding of old students' dinners; but at St. Mary's and the Middlesex Hospitals there were in addition prize-giving ceremonies, of which addresses formed a part.

MEDICINE AS A LIBERAL EDUCATION.

In an address at the Middlesex Hospital Mr. SAMPSON HANDLEY, after a reference to the presence of a number of new students, drew attention to the careers of some distinguished men who after commencing life as doctors had adopted another profession. His object, he said, was to show that medicine was not a mere technical training, but afforded one of the best means of developing a man's powers in whatever direction those powers were later to be applied. In other words, a medical training was in itself a liberal education, though it was true that lifelong exercise of the art of medicine might ultimately tend to narrow a man's outlook.

Among those whose names he quoted in this connexion was that of Canon Arnott, who has now for a considerable number of years been rector of Beckenham; before that he was on the staff of the Middlesex Hospital as assistant surgeon, in addition to being a Fellow of the Royal College of Surgeons and a pathologist of some distinction. Canon Arnott rigidly abstained from any exercise of his old craft of surgery, whether by way of advice or practice, and this, Mr. Handley remarked, appeared to be the safe general rule for those who left the profession. Canon Arnott had informed him that though medicine had no direct value in his present field of work, yet his old scientific training, and the hours he had spent in microscope work, the power of sympathy with suffering, the realization of the inexhaustible study and experience needed for anything like dogmatism in the ways and byways of Nature, the humility necessary before the baffling problems of life, disease, and death—all this was of incalculable value in his present profession. Medicine, too, provided a knowledge of man and affairs and an unlimited acquaintance with the seamy side of life which were of advantage in his work.

Keats, Goldsmith, and the present Poet Laureate, Dr. Bridges, were also mentioned; and in regard to the latter he suggested that it was not difficult to see how Dr. Bridges's poetry must have gained in directness and humanity from his years of service to the London poor. It balanced and harmonized the complex elements of his intellectual training, and prevented that atrophy on the volitional side which was the bane of a purely literary career. Among politicians who had started their careers as medical men he mentioned the late Lord Ilkeston, Dr. Jameson of South Africa, Sir George Robertson, who after spending ten years in the Indian Medical Service proved himself an unrivalled manager of men by his fighting and diplomacy among the wild tribes of the Indian frontier; Mr. G. E. Morrison, an M.D. of Edinburgh, now official political adviser of the President of the Chinese Republic, Dr. Sun Yat Sen—the first student of the English medical school established at Hong Kong by Mr. Cantlie—who had organized the movement which led to the downfall of the Manchus; and Sir Robert Finlay, whose brilliant career as Attorney-General proved that a medical education at any rate offered no insuperable obstacle to subsequent legal success.

The name of Sir Seymour Haden, founder and President of the Royal Society of Painter Etchers, was also recalled. He continued to practise as a surgeon until the age of 52, regarding his etching as a recreation rather than an occupation. Perhaps he had given too much of his life to medicine; if his art had been the single passion of his life he might have been an English Rembrandt. Another instance brought forward of a doctor turned artist was Mr. Henry Tonks, now assistant professor at the Slade School of Fine Art, and a man for whom many generations of Middlesex students had felt affection not unmingled with a wholesome dread. Among actors who were originally medical men was Sir Charles Wyndham, now one of the acknowledged heads of the dramatic profession, and doubtless one of the lost leaders of medicine.

Sir Joseph Hooker, like Huxley, began his career as a naval surgeon. It was medicine which introduced him to botany, and the careers of both men illustrated one great direct advantage of a medical training, namely, that it unlocked for medical men the pageant of the world. The law and even the Church had to stay at home when poles were to be reached or unknown territory crossed, but the doctor could not be spared. The steamship companies would show him the gorgeous East and provide him with pocket money if he cared to take a voyage as a ship's surgeon. If he did so his training in observation would prepare him to use his privileges to the greatest advantage; a man could hardly have a medical training without being able to say with one of Mr. Morley Roberts's characters: "I sees what I looks at." As explorers doctors had been very successful, as witness the careers of Livingstone and Mungo Park.

Other names were those of Mr. Stephen Paget, who had solved the problem of serving two masters in a unique way by becoming the literary protagonist of science, and Sir Arthur Conan Doyle, whose debt to a medical training was both large and direct, since it led him to discover Sherlock Holmes in the person of one of his surgical teachers at Edinburgh.

These examples, Mr. Handley continued, sufficed to show that the renegades of medicine included a large proportion of men who had subsequently reached eminence in other spheres of activity, and as the total number of renegades was comparatively small it was a fair inference that the study of medicine provided a liberal education, and one which so developed the individual that it fitted him for any of the varied calls that life in its other departments might make upon him. The renegade doctor was likely to be found near the top of whatever tree he selected. He would not maintain that science was more than a necessary complement to literary and linguistic training; indeed, attempts to make science the main ingredient of school education were predestined to failure; they flew in the face of the great biological generalization that the development of the individual was an epitome of the development of the race. The human embryo, beginning as a unicellular organism, passed through a stage in which it possessed gill-slits like a fish before it assumed its final mammalian form. This principle supplied the key of the educational problems. The attention of a boy was rightly directed, in the first instance, to the childhood of the human race, to language, classics, and history. A scientific man if denied the power of expression which only a literary training could give would be deprived of most of his power to influence his fellows; but given an adequate literary foundation, an acquaintance with rational science—the most recent achievement of the race—would naturally fall in the university or post-university stage of education, and was necessary to complete the edifice.

For the general purposes of life, medicine—which blended with and merged into pure science in every direction—was the best way of getting a broad general acquaintance with scientific thought; as compared with pure science it had the advantage that it did not exclude the human interest, and that it broke down that morbid dread of plebeian contact—that want of recognition of the dignity of service—which was not infrequently seen in the educated Englishman. Goethe, who had studied medicine and acknowledged its charm, said:

> My disgust at the patients gradually decreased as I learnt to forget their physical condition in the ideas suggested by it, which rendered possible the restoration of human form and human life.

The personal service which a medical student cheerfully gave to the more unfortunate of his fellow citizens, the intimate knowledge he acquired of their miseries and heroisms, their virtues and vices, must tend to broaden his outlook on life. He who washed the beggar's feet might find his own hands whiter than before. As a training in resourcefulness and presence of mind medicine was as good as the fighting services, for the demands that it made for such qualities were of daily occurrence. Like the middy on a torpedo boat the medical man acquired his responsibilities early. The house-surgeon just qualified must be prepared at any moment to perform, for instance, tracheotomy—a delicate operation, in which death would call an immediate checkmate to any false move.

No one method of research would exhaust the treasures of the universe, and for this reason those who had leisure for full self-development should complete it through science. In its leaders collectively, if not individually, the nation had a right to expect that combination of literary and scientific training which was the source of Goethe's strength. It was not sufficient that a man of science should be at hand to consult, but the scientific habit of mind should be directly represented in the national councils. Mr. Handley then supported this thesis by reference to facts in the history of various nations, and concluded his address in the following words: "You will see now why I believe that one of the most urgent needs of the day is the presence among our leaders—who at present receive almost exclusively a classical, literary, or a legal education—of a larger number of men who have had a scientific training. To those ambitious young men who aspire to mould the destinies of their country I would say: Leave the past when you have attained your degree in Arts and come where knowledge is alive and growing. Come among us and spend a strenuous five years in

securing the scientific knowledge and the mental discipline medicine is capable of giving. In your subsequent career of politics or public service of whatever kind you will find that the time has been well spent, and that the practice you have acquired in applying precise knowledge of many kinds to the service of humanity has vastly increased your vision and usefulness in the wider spheres to which you may subsequently be called."

The Value of Experiments on Animals.

The address at St. Mary's Hospital was delivered by Sir John Prescott Hewett, Lieutenant-Governor of the United Provinces, India, who, after giving a general account of the progress in sanitation and public health in India during recent years, said that as an administrator he had been associated with medical men in combating certain diseases in India. The experience thus gained had afforded him the clearest proof that the attempts of the Government to deal with the more grievous afflictions of the human race in India would have been far less successful if they had not had the advantage of knowledge acquired by means of experiments on animals. He had no initial prejudice in favour of experimental medicine, but had had opportunities of estimating first hand the value of certain methods of treatment which depended on animal experiments. Speaking, first, of small-pox—a disease which prevailed in India to an extent unknown in modern Europe—he said that thirty years ago it gave rise to a death-rate of nearly 1 in 1,000 of a population numbering many millions; since vaccination had been actively employed the rate had steadily declined. Moreover, the proportion of wholly or partly blind young people, which used to be very high in districts where small-pox was chiefly prevalent, had decreased in general accordance with the spread of vaccination. No fair-minded person who examined the facts could avoid the conclusion that these results were due to vaccination. In the circumstances it was surely calamitous that the opponents of vaccination in England should have set themselves to make the people of India hostile to a process which had been of so much benefit.

Turning next to the consideration of plague, he said that it had long been recognized that, except in extraordinary circumstances, compulsory measures aiming at the reduction of its prevalence were impracticable, and the great obstacle with which the Government had been confronted was the difficulty of convincing the people of the utility of particular methods of prevention or cure. It was not easy to appreciate the mental attitude of persons who, without having made a serious study of the facts and figures, had increased the difficulties of those who were doing their best to contend with this terrible scourge by asserting that the vaccine discovered by Mr. Haffkine had encouraged the spread of plague in India. There had been instances in which evil results had been caused by particular doses of it having been unfit for use, but these were rare, and the use of the vaccine, speaking generally, had been of enormous benefit. As the head of the Government of two provinces in succession, one containing 47 million inhabitants and the other 14 million, he had had continually to deal with outbreaks of plague, and the experience thus gained had convinced him that Haffkine's vaccine was of the greatest service as a protection. As a specific instance he quoted an incident at Nagpur. There a Parsi friend of the speaker endeavoured during the progress of a serious epidemic to induce the whole of the workpeople in his mills to be inoculated. Out of some 6,000 or 7,000 mill hands, 5,046 consented to be inoculated, and among them only 9 fatal cases of plague occurred, 6 of which were the result of an attack within ten days of inoculation; among the comparatively small number of uninoculated there were as many as 118 deaths.

Enteric fever for many years was chief among the fatal diseases prevalent in the British army in India; the mortality due to it in 1898 was over 10 per 1,000 of strength; five years later Sir Almroth Wright's anti-typhoid vaccine, which had already been used in a spasmodic fashion, came into general use. The result was that the death-rate among the British soldiers had fallen in 1911 to only 0.33 per 1,000. In that year 61,822 men were protected by vaccine and 9,552 were not protected. Among the latter there were subsequently 6.7 cases and 1.15 deaths per 1,000, while among the protected men the corresponding rates were only 1.7 and 0.17. At one particular military station which was under the speaker's personal observation and where outbreaks of enteric were of very frequent occurrence, 687 out of 693 men serving in four battalions of artillery were protected by vaccination, and only 1 case occurred among them, while there were 2 cases among the 6 non-protected men. When the speaker first went out to India, and up to the time that the use of Sir Almroth Wright's vaccine became established, the cemeteries in the cantonments of the United Provinces were strewn with the graves of young men who had gone out to serve their country in India, only to be carried off by enteric fever within a year or two of their leaving home. Now the conditions were so completely changed that the death-rate even in a newly arrived regiment had fallen to about what it might be expected to be in England.

Some 22,000 deaths were annually reported in India as due to snake-bite; possibly the figure included a certain number of deaths due really to other causes, but a large residue were certainly due to snake-bite. The antivenins which, if promptly administered, would prevent death following the bite of the cobra and of Russell's viper, respectively—these two being among the most poisonous snakes met with in India—had been discovered by means of experiments on animals, and it was to be hoped that further discoveries would result in making similar treatment of other poisonous snakes feasible.

An even more terrible scourge in India was hydrophobia; it was vain to hope that rabies could be exterminated in a country where pariah dogs, jackals, and wolves alike conveyed the disease, by the same means as those adopted in Great Britain. Until some twelve years ago a person in India bitten by a mad dog had no remedy; only the well-to-do could afford to journey to the Pasteur Institute in Paris, and owing to the length of the voyage this might often be in vain. Poorer persons could only suffer and die in silence. But in 1900 a Pasteur Institute was established at Kasauli, and since then 13,540 patients, drawn from every rank of life, had been admitted. Among them there occurred 225 deaths in cases in which the treatment could not be applied in time, and 81 in which the patients died within fifteen days after the completion of the course, but the treatment as a whole showed splendid results. The long distances which had to be travelled in India made it evident, however, that one institute was inadequate. In one pathetic case, a young English woman while expecting her first child was bitten by a mad dog during the hot weather in the south of India; she had to undertake a terribly hot railway journey of nearly a week's duration, and her case when she arrived was too advanced for hope, and she died. Since then a second institute had been established in the south of India, and a third was to be erected in Burma. When these arrangements had been completed, one or other Pasteur institution would be fairly accessible from every point in the territories under the Government of India, and provision would have been made to prevent an enormous amount of misery. In conclusion, Sir John Prescott Hewett expressed a hope that what he had attempted to tell his audience would convince it that Indian experience, like that acquired elsewhere, proved conclusively that operations on animals afforded untold benefit to the human race. These operations were represented as acts of cruelty, but if that were so what term could be applied to the acts which daily imposed limitless suffering on beasts of burden and other animals on whose aid mankind depended, not only in India but elsewhere? In India residents every day witnessed horrors in the treatment of animals which were perhaps inconceivable to those in Great Britain who were accustomed only to see the pampered pets and well-fed cattle owned by themselves and their neighbours. In India there was at present only one institution which made efforts—crippled by lack of funds—to promote the well-being of animals. For lovers of animal life, for those whose earnest wish it was to save the beasts of the field from unnecessary cruelty, and to ensure for them the minimum of harshness and pain involved in their use in the service of man, there was in India a splendid field for benevolent work, which would be twice

blessed in bringing a relief to animals who now suffered, and honour for those who undertook it. The speaker pointed out, however, that it was not solely in India that there was room for the exhibition of well-balanced energy in this direction, and quoted instances of cruelty in the treatment of domestic and other animals by ordinary laymen in Great Britain itself. He then concluded his address in the following words: "But the last people in the world who deserve to be attacked on the ground that they are cruel or even unsympathetic towards animals are those devoted seekers after benefit to the human race who are in this country in pursuance of the objects of the Research Society, conducting experiments on animals subject to strict rules and regulations, and imbued with the righteous desire to cause them the least possible misery and pain."

THE RADIUM INSTITUTE.

Owing to the wide prevalence of malignant disease of various forms, it is but natural that any method of treatment which offers, or seems likely to offer, cure, or even amelioration, should raise the hopes of such sufferers, who will do anything to come within its beneficent influence. Among these promising methods an important place must be assigned to radium, and quite recently there has been in the press an unwonted amount of comment on treatment by radium, and many references to the Radium Institute, established in Ridinghouse Street, Langham Place, by the munificent gifts of Lord Iveagh and Sir Ernest Cassel. As some seriously inaccurate statements have been made, it may be well again to state the facts, and incidentally to give some account of the plans for increasing the usefulness of the institution which are now ripe.

The Clinical Work and Staff of the Institute.

The Radium Institute was opened on August 14th, 1911, and from that date to the present the work has steadily progressed in volume. At first the institute was open from 8 a.m. until 6 p.m. for the purpose of seeing and treating patients; but so numerous did the applications from poor patients become, that it was decided to add a night clinic, and that has been in full operation ever since. It was inaugurated sixteen months ago, and goes on until about 11.30 p.m., sometimes until midnight. A glance at the case-sheets indicates what a great boon this must be. Though paying patients are not seen during the evening, poor patients are sometimes treated in the daytime, especially—a point which is always inquired about—if they have come from the provinces by excursion train. Between 700 and 800 new cases a year have been seen, and the majority have been treated gratuitously, the average yearly number of treatments being 3,000 for paying and 4,300 for necessitous patients. There is no difference of any kind in the treatment of these two classes; they all use the same rooms, the same cubicles, the same members of the staff attend to them, and the same apparatus is employed.

There is no such thing at the institute as a crowded waiting-room; every patient is sent by a medical man—an inviolable rule—and comes to a time appointment.

Every application for treatment is numbered, and the cases are treated in strict order of priority. Between 70 and 80 per cent. of the cases seen and treated are examples of inoperable cancer. There have been many efforts to secure precedence, but no variation has been permitted.

The staff consists of the Superintendent (Mr. Hayward Pinch, F.R.C.S.), two qualified medical assistants (Dr. J. E. A. Lynham and Dr. A. Burrows), five female nurses, three male nurses, the director of the laboratory (Mr. W. L. S. Alton, F.I.C.) and two assistants (Mr. C. F. Hogley, B.Sc., and Mr. J. F. Holding), besides the usual porters, clerks, and messengers.

A point which has been a good deal discussed is the practice of burying radium tubes in the midst of the growth. In cases of superficial sarcomata, recurrent breast nodules, surface tumours of the face, and growths in other easily accessible situations, tubes have been inserted into the growth at the institute, but chiefly in the case of those whose means did not enable them to bear the expense of a nursing home. In one case of periosteal sarcoma of the clavicle the superintendent incised the growth, embedded a radium tube in it for twelve hours—there are no beds in the institute—then sewed up the wound, and the patient went to rest outside; she returned next morning and had a similar course, which sufficed to cause the disappearance of the growth.

Emanations.

The value of radium emanation, to which some reference was made in Mr. Hayward Pinch's report on the first year's work of the institute, published in the British Medical Journal of January 25th of this year, has been confirmed by more recent experience. Mr. Alton stated that the preparation of a continual supply of radio-active water had then gone beyond the experimental stage, and Mr. Hayward Pinch reported that emanation solution of a strength of 1 to 2 millicuries per litre had been used with benefit in a series of cases of arthritis deformans. An important part of the work of the institute now consists in sending out the emanation solutions to medical men in various parts of the country. We are informed that during one recent period of ten days emanation to the value of £17,000 was thus sent out.

Equipment.

Some wild statements have been published with regard to the equipment of the institution. The establishment possesses certainly not less than £80,000 worth of radium, taking the price of radium at £20 a milligram, probably the largest holding of radium for therapeutic purposes in the world. There are forty-two separate pieces of apparatus, all of which are constantly in use. The strength of the applicators varies from 5 mg. to 150 mg. There are 400 mg. in tubes alone. As much as 1 gram, and even 1½ gram, has been used at one time in an extraordinarily extensive case. When our representative visited the institute the first of the patients was being treated with 500 mg. (£10,000 worth) at once, another with 390 mg., and a third with 375.

All the plates belonging to the institute are mounted with radium. Whatever kind of varnish is used, radium rays exert a disintegrating effect upon it, so that the varnish cracks and falls off. The re-varnishing and remounting cannot be, we are informed, satisfactorily accomplished in less than a month. The preparation of radium plates and emanation tubes, of which a large and increasing number are now demanded, proceeds continuously under the supervision of Mr. W. L. S. Alton, Director of the Chemico-Physical Laboratory of the institute. It is easy to see that the misstatements, which are apt to be very mischievous, arise from inadequate knowledge. All the nurses employed in this work have to be specially trained, owing to the specific nature of the requirements and the close attention to minutiae; and it must be remembered that the place is open sixteen hours out of the twenty-four. It is, of course, necessary to give the staff a holiday.

It has been stated in one of the newspapers that the institute was closed during the whole month of August, and upon this was based the grievance that £80,000 worth of radium was held up and the hospitals starved. The fact is that only the treatment by varnished plates was suspended for a time to permit of their renovation. The superintendent was himself on duty until August 14th and his senior assistant resumed on August 25th, while the laboratory director was at his post during the whole month. There was no interruption in the making of radium emanation solution, plates, and tubes, and in the treatment of cases with apparatus, and the supply of radium water went on without cessation.

The institute has mounted apparatus for similar establishments in Denmark and America, and for one in Germany, and during the International Congress of Medicine the medical superintendent gave at the institute fourteen demonstrations, and one lantern lecture before the Section of Dermatology. During the Congress, and for some weeks prior to it, a considerable number of medical men were conducted over the establishment, and all its apparatus and its *modus operandi* explained.

Future Developments.

The managing committee, of which Sir Frederick Treves is chairman, has in contemplation important extensions of the work of the institute in several directions. Additional ground has been purchased, and upon it a large extension of the present building will shortly be erected. The new buildings will include special laboratories for research, which will be under the direction of a medical officer who will prosecute clinical researches in relation to the action of radium. It is also proposed to establish clinical courses of instruction for medical men who wish to study the methods of using radium and its therapeutic effects. The success which has attended the work of the institute and the appreciation shown of it by the medical profession have encouraged the managing committee to extend its operations in the manner above indicated, but it is not proposed to make any alterations in the general principles upon which the institute is conducted.

LITERARY NOTES.

We are informed by Messrs. Baillière, Tindall and Cox that Dr. E. G. Younger's book on *Insanity in Every-day Practice* has been translated into Chinese by Drs. Maison J. Chu and Philip B. Cousland, and has been published at Shanghai by the China Medical Missionary Society. The same firm notify that Dr. Langdon Brown's book on *Physiological Principles of Treatment* had been rendered into Italian by Dr. Corletto Francesco, and published at Padua by Fratelli Drucker.

Amongst a number of other strange revivals of bygone beliefs and customs a curious superstition relating to snake-bites is mentioned in the July number of the *Old-Lore Miscellany of Orkney, Shetland, Caithness, and Sutherland*, Part III, vol. vi, as still existing in certain parts of the Scottish Highlands. In a brief summary of a recent meeting of the Philalethetic Union in Edinburgh we are told that one of the speakers who took part in a discussion on Highland superstitions said that "he had sometimes seen in Sutherland a serpent lying on the road cut in three. He was told if any one was stung he ran to the water, the head also ran, and if the head got there first the person stung would die." Another ancient belief is recorded in the Thurso Kirk-Session Records, of which an extract is quoted in the same number of the *Old-Lore Miscellany*. From this we learn that it was once considered almost as unlucky for a bridal party to meet a woman as for a member of the St. Clair family to cross the Ord on a Monday. The record states that on August 30th, 1710, "William Robson charged, called, compeared, as also Mary Coghil, who delated him and declared that as she was coming to town one day she met a marriage and that the sd. William Robsone left the company and came to her to force her out of the way that she might (not) meet the married pair, it being a superstitious persuasion among the vulgar that women's feet are unlikely." The Thurso authorities of that day were evidently more enlightened men than many of their contemporaries, for further on we read that the credulous Robson "was reproved for his practice and admonished to shun the like in time coming wh. certification of a severer censure." The table of contents for the July number of the *Old-Lore Miscellany* includes several interesting articles, amongst which may be mentioned Mr. George W. Stout's account of bird life in Fair Isle, and the second instalment of a series of articles by the Rev. A. Beaton on the early Christian monuments of Caithness; whilst Mr. A. Francis Steuart has given some interesting extracts from the postbag of an Orkney family in the middle of the eighteenth century. Some sketches have also been contributed to this number, which fully maintains the high standard of antiquarian interest reached by its predecessors.

The *France médicale* quotes the following passage from a rare work by Dulaure, entitled *Etrait des singularités historiques*. The book, which was published in London and Paris in 1788, has only the initials "T. A. D." on the title-page. Whilst Henry IV was busy subduing the League, the Duke of Angoulême, natural son of Charles IX, who was with the army, fell ill, and was obliged to remain at Meulon. His physician expressed his anxiety to a professional brother in the words, *Non vacat periculo*, and as the patient knew Latin he at once asked for a confessor. After the Duke had settled his spiritual affairs the doctor said to his servants that there was only one method of saving their master—that was to make him laugh. To work this cure the Duke's secretary and his agent, each aged 60, with the captain of his guards—an old soldier of very solemn aspect—agreed to present themselves before their sick master clothed wholly in white. The captain, who was in the middle, alternately slapped the cheeks of his neighbours, who each had on his head a red cap with cock's feathers, while they on their side tried one after the other to knock off the captain's hat, which was of a ridiculous shape. At the sight of this pantomime the Duke burst out laughing; this gave rise to abundant bleeding at the nose, which was soon followed by great relief. The fever, which had lasted twenty-two days, sensibly diminished, and six days later the patient was in a fit state to be transported in a litter to the country, where he completed his cure. This incident recalls the case of a cardinal who, being at the point of death, caught sight of his monkey putting on his red hat. The laughter caused by this sight produced such an effect that he was cured. A cure almost as remarkable was wrought at Chateaudun on Father Victor Bernard, ex-Guardian of the Convent of the Recollects. In 1786 he was looked upon as dead by every one but his physician, who, thinking there was still a spark of life, rubbed his temples with scented waters, and made him swallow a little Spanish wine. To the great astonishment of the beholders, the friar moved and made some sign, though still remaining in a condition approaching to coma. In the afternoon of the same day the physician introduced into the infirmary where the patient was two persons who played various airs on the violin. An inhabitant of the town and one of the friars, each aged 72 years, danced to the music before the patient's bed. The doctor's dog took part in the dance. The sight of this remarkable ballet aroused the dying man and made him laugh. From that moment he began to improve, and soon afterwards he was able himself to announce to the public his complete recovery. One rather envies the facility with which these patients were amused, but every one knows that the physical act of laughter may have a beneficial effect. We have ourselves heard of a case in which a patient in imminent danger of suffocation by a suppurating tonsil was saved by a fit of laughter which burst the abscess. In the *Golden Bough*, J. G. Frazer mentions the case of a King of Corea who suffered terribly from an abscess in the lip till his physician called in a jester whose antics made the monarch laugh heartily, with the result that the abscess burst.

MOTOR CARS FOR MEDICAL MEN.

L. asks for experience of the Lagonda 11-h.p. light car, its suitability for medical men, reliability and cost of upkeep, and also for advice as to second-hand two-seated cars at about the same price.

Motor Cyclist writes: The experience of owners of Ford cars would be interesting to prospective medical motorists just now because they are cheap cars and apparently not expensive to keep up. As their initial cost is no greater than that of the more reliable cycle cars, as they are more powerful, and give greater accommodation and comfort, unless their running cost is greater than that of the more powerful of the cycle cars, it would seem better policy for a doctor to buy a Ford than a cycle car. The belt-driven air-cooled cars referred to by one of your correspondents in the Journal of September 20th do not seem satisfactory.

Ziegel of New York has recorded (*Journal of Cutaneous Diseases*, August, 1913) a case in which rapid regression of a gumma of the tongue followed the intravenous administration of salvarsan. The patient was a general practitioner infected on the hand four year earlier in the course of his obstetric work. He had undergone a systematic course of mercurial treatment, begun as soon as the nature of the primary lesion was diagnosed. In another case reported by Ziegel a scaly syphilide of the palms, which had appeared three years after the primary infection and had not been permanently cured by mercury by intramuscular injection, disappeared after injection of salvarsan, though the Wassermann reaction had not certainly disappeared.

British Medical Journal.

SATURDAY, OCTOBER 4TH, 1913.

RESIGNATIONS IN SOUTH LONDON.

THE efforts of some of the newspapers to make political capital out of what has been called a "split in the Association" will, it is hoped, be seen in their proper perspective when members read—as we hope they will—the official report, forwarded for publication by the Honorary Secretary, of the special meeting of the Wandsworth Division on September 23rd. The Division on April 30th, when the lists were made up, had a membership of some 260; at this special meeting, which was attended by 46 members, a resolution was passed by 21 to 14 (11 not voting), expressing the opinion that the present attitude of the Association, which it described as "pro-panel," is detrimental to the interests of members of the profession in general and the non-panel practitioners in particular, and approving the action of all such members in resigning from the Association. A perusal of the report will show that no attempt was made to discuss the relations of the Association to the profession in general, but that a line was taken which, if generally followed, would definitely make a split between those members of the profession who are working the Insurance Act and those who are not. We take leave to say that such a policy, if persisted in, must be damaging to both.

It is true that there has long been a more or less well marked line of distinction between practice among the industrial classes, often to a greater or less extent conducted on a contract basis, and that carried on mainly among the middle and upper classes. The Insurance Act has made the line of cleavage sharper in some districts. But the Association has never held the view that the interests of the practitioners engaged in these two classes of practice, though they may differ in some respects, are antagonistic, and it has never had any difficulty in defending the common interests of both classes. All sections of the profession have many interests in common. All are interested in its scientific advancement. All are concerned in watching and resisting encroachments by the State and by various public bodies on medical traditions, privileges, and rights. All are agreed in maintaining medical remuneration at a rate which will ensure the highest practical efficiency. Thus all have been glad to find in the Association a common meeting ground for scientific, social, and political purposes. Neither the Insurance Act nor any other Act can destroy these common interests, and the profession must not allow any natural irritation and vexation of spirit caused by recent events to obscure these fundamentals. We are well aware, and have frequently stated, that many doctors who refrained from going on panels have good reason for feeling sore with their colleagues who, by their action and votes previous to last January, gave grounds for the belief that they were ready to maintain a determined attitude. Their failure so to do has led many of those who did not join the panels not only into financial loss, but into what is in many ways much worse—distrust of their fellows and black pessimism as to the future. But these feelings, natural as they are, must not make us forget that the profession has some very serious difficulties looming in the near future which will be aggravated considerably if the short-sighted policy adopted by some South London members is followed on any large scale.

What, it may fairly be asked, is the object of these gentlemen? If it be their opinion that the Association and its policy, according to their interpretation thereof, are so abhorrent to them that they are determined to stand apart from it and to damage it as much as possible then there is no more to be said. If not, what do they stand to gain by their action? Is it conceivable that even were a considerable number of members to follow their lead a body so formed would have as much power to further the policy desired by the profession as a united association? Does not the old fable of the bundle of sticks apply? Is it not, on the other hand, true that the defection of even a small number of members must tend to weaken the power and influence of the Association not only in dealing with insurance matters, but in carrying on all the other political and social work it is doing for the profession.

When it is asserted, as in the Wandsworth resolution, that the policy of the Association is "reacting detrimentally to the interests of members of the profession in general" what is meant? Those who object to the acceptance on any terms of the Insurance Act, if they had thought it necessary to resign in order to emphasize their view, might have done so in June, 1911, when the Association accepted the principle of compulsory State insurance for medical benefit, and declared its policy to be to seek the amendment of the bill in certain fundamental respects, the most important of which were embodied in the six cardinal principles. This policy was generally endorsed by the profession, and that those who objected to the scheme altogether did not then resign was no doubt due to a realization of this fact coupled with a feeling of loyalty, and a desire not to weaken the solidarity of the profession in its appeal to the Government, to Parliament, and to public opinion, to remedy the serious defects which the Association had pointed out.

There are those, we know, who say that the Association did nothing for the profession, and gained nothing for it from the Government or from Parliament. It is perhaps true that no history is so little known as recent history, but such statements as have been quoted really argue a lack of memory beyond any reasonable limit of forgetfulness. The Association was insistent and persistent in its efforts to place the true state of the matter before the country, and its action was eventually attended with a large measure of success. The bill as introduced contained no provision for the representation of the medical profession on administrative bodies under the Act; it did not propose to institute Local Medical Committees; it made no provision for free choice of doctor by patient, or patient by doctor; it perpetuated the old friendly society control of contract practice so hateful to the profession, and in the speech in which he introduced his measure, Mr. Lloyd George spoke of "raising" the remuneration of medical men to a capitation fee of 4s. 6d. It is true that the Association did not gain all that it asked. It would be difficult to name any organization which ever got all it asked for in a struggle of this kind, but it may be pointed out

that in nearly every respect the position of the British profession in regard to State insurance, at its inauguration in this country, is superior to that of the German profession after over thirty years of organized struggle.

But among the critics of the Association there are, in addition to those who object to the insurance scheme altogether, others who find grave fault with the way in which it is being administered. They find fault especially with the policy pursued by the London Insurance Committee in refusing to permit insured persons to make their own arrangements—to "contract out," as it has been called. There is no doubt that the panel system is less adapted to the needs and the customs of London, where contract systems of practice had never made much headway, than to some other parts of the country. The objections felt to the panel system are not the same in all parts of London, but they are very real, and the London Insurance Committee is now, we believe, aware that it would have been politic to have responded more readily to requests from insured persons to make their own arrangements. But the cry arose that it was all an attempt "to break down the Act," and the heart of Pharaoh was hardened. More impartially considered, it would have been perceived to be an attempt to give to the principle of the free choice by both patient and doctor, won for the profession by the British Medical Association and heartily endorsed by the House of Commons, the widest extension compatible with the terms of the Act itself as interpreted by those who were most active in promoting this policy. The policy has not hitherto met with the success deserved, but it is not easy to understand the logic of those who on that account resign from the Association.

Its recent efforts to amend the Act so as to secure the effective free choice of doctor on or off the panel and the income limit, have apparently been forgotten by some of the extremists. Why were these efforts not successful? Because with comparatively few exceptions members of Parliament would not even consider the amendments and all the influence of the Government was exerted against them. Do the seceders think that Parliament is more likely to listen to a smaller body committed to a particular view than to a body which put forward its amendments after careful consideration and conference between all sections of the profession? To entertain such an idea seems to argue a certain blindness to political realities.

It will be noted that a good deal was made at the Wandsworth meeting of the so-called "pro-panel" attitude of the Journal. We believe that the great majority of members will support us in our contention that it is the duty of this Journal to defend members of the profession, of whatever class, against unjust aspersions and calumnies from whatever quarter they come. Some of those who have now resigned took umbrage because charges freely made against panel practitioners as a class by certain politicians, newspapers, and friendly society leaders were challenged by the Journal. There are members of the profession whose conduct cannot always be defended, but when charges of neglect, incompetence, cruelty, and dishonesty are brought against panel doctors in a wholesale way, have they not the right to expect that their cause should be championed in these columns? We demanded that these general charges should be substantiated by proper evidence, and, pending its production, we declined to accept them. We do not believe that it is impossible to protect one class of the profession, and that a very arge on e, without doing detriment to another section of the profession. Yet that is apparently the theory held by some.

The Association stands for the honour and interests of the whole profession, and it cannot be diverted from this course by any outcry, or by any extremists on one side or the other. No clear statement has been made of the particular way in which the Association has failed to try to protect the interests of the doctors not on the panel. We have shown that to bring about the object on which they lay greatest stress—the absolute free choice of doctor—the Association spent a great deal of time and money in placing amendments before Parliament. It was not successful, and it rests with those who do not accept service under the Act to bring before the Association in constitutional ways the methods by which they believe the disadvantages under which they labour can be removed or ameliorated. If they do so it is certain that every attempt consistent with justice to other sections of the profession will be made to meet them.

The struggle to maintain the independence and the rights of the profession, many would say, is only just begun; it is certain that it is very far from being over. We are likely to have amending insurance acts for many years to come, and the price of freedom is constant vigilance. It is pretty certain that legislation to extend medical benefit to the dependants of insured persons will be introduced sooner or later, the exact date depending probably on political or party exigencies. Were the insurance scheme so extended, the effect must be still further loss to those members who have not joined the panel, and when that struggle comes the non-panel men will require the goodwill of the panel men to carry it to a successful issue. Is it, then, wise to emphasize the distinction between those who have and those who have not joined the panels? Must not any distinction lessen the chance of gaining the object in view by diminishing the right of the Association to speak in the name of a united profession? Is resignation from the Association at this time calculated to further the goodwill which has hitherto existed?

Nothing can be done with Governments or with the House of Commons except through the effect on public opinion of a solid unity of the profession in claiming just and fair conditions. This union can only be achieved through the British Medical Association, which has already done so much to vindicate the rights of the profession. If it is to continue to champion the medical cause with success, it must have the full support of the profession as a whole, and must not be handicapped by resignations or threats of resignations every time it fails at once to attain everything that every member desires. When a rebuff is received the wise and courageous course is, surely, to seek to strengthen our organization and not to weaken it by resigning "as a protest."

DISCARDED WARSHIPS AS NATIONAL SANATORIUMS.

The life of a modern cruiser or battleship as an active engine of warfare is comparatively short; the vessel ceases to be effective as a first-class fighting machine long before it has decayed as a sea-going ship. Travellers passing through the Kyles of Bute in former days used to gaze with wonder at the grim array of grey hulks, healthy veterans all, but hopelessly out of date, which lay for so many years degenerating from sheer disuse in that lovely waterway. "Could they not be put to some use?" was

the daily remark made by hundreds of holiday tourists, and it may be that the oft-repeated question led to their ultimate removal to some less frequented roadstead. Being out of sight, they soon passed out of the public mind, but with each succeeding year the older types of warship are discarded, and a brief epitaph in the daily papers proclaims that their career of usefulness has ignominiously ended by a sale to shipbreakers. Many of these large vessels, however, if unfit to cope with modern navies, are still fit to keep afloat for many years if some useful purpose could be found for them. A practical suggestion for utilizing them has recently found favour in America. This suggestion is that the discarded ships of the American navy should be used to provide the much-needed sanatorium accommodation for consumptives, and as open-air schools for the vast numbers of potentially tuberculous children in the United States.

The idea of using floating hospitals or sanatoriums for children is not a new one in America. A good many years ago both Boston and New York used old ferry boats, simply fitted up, for sending infants and young children out of the hot and dusty lanes of the city into the cool clean air of the sea during the hottest summer months. Boston Harbour is an ideal place for such a scheme, and it has, we believe, worked well, and the tuberculosis service of New York has had most excellent results, we are told, from a boat service. Opinion in America was therefore well prepared to receive the discarded battleship proposal, but it seems to have originated, or at all events to have been first carried out, in Italy. The secretary of the Italian navy recently decided that three old warships should be converted into sanatoriums for tuberculous children. There has long been a society in Italy which, under the impulsion of Dr. Concetti, professor of pediatrics in the University of Rome and director of the clinic for diseases of children in that city, has maintained a large number of seaside homes to which tuberculous or debilitated children are sent. We may see in the recent decision of the secretary of the Italian navy a continuation and extension of this system. Dr. Arthur Jacobson, who is examining physician for applicants for admission to the "preventorium" sanatoriums and hospitals for the tuberculous of Brooklyn, was moved by this example to make an appeal to the American public, and, with the concurrence of Dr. A. Jacobi, the matter was taken up by Dr. S. A. Knopf of New York, whose name is well known as an authority on phthisiotherapy, and by him brought to the notice[1] of the fourth International Congress on School Hygiene held in Buffalo last August.

Why spend money, Dr. Knopf asked, upon expensive buildings on shore while these great Government vessels are lying idle or are being sold to shipbreakers at scrap-iron prices? To equip one of them for the reception of consumptives would cost much less than a building adapted for the same number of patients on shore, and such floating sanatoriums could be moved into appropriate summer or winter quarters at will. One great advantage of a ship over a shore sanatorium would be the facility of utilizing open-air during bad weather. A great flush deck, cleared of its usual impedimenta and protected by thick awnings, would form an ideal area for exercises or even for prescribed rest, in ever-changing air. Moored in sheltered situations in some of our home estuaries and bays, these old ships might afford much of the sanatorium benefit to which such numbers of British sufferers are now by law entitled.

We would commend Dr. Knopf's suggestion to our own Admiralty authorities. The First Lord, in the course of his energetic official and unofficial inspections of every detail of the navy afloat, must be aware of the capabilities of many of our discarded cruisers to aid thus in the peaceful warfare against the raids and invasions of the tubercle bacillus. By careful selection of appropriate positions for such floating sanatoriums—as, for instance, in the mouth of the Clyde for the consumptives of the city of Glasgow, the Forth estuary for those of Edinburgh, the Medway for London, Dover for the southern counties, Dartmouth for the west, and other like positions round the coast—provision might be made which would bring the advantages of sanatorium treatment within the reach of a far larger number of persons who would be benefited by it than are ever likely to obtain it under present conditions.

Particularly useful would such vessels prove in the treatment of tuberculous joint disease in children. Sea air, which does not suit all forms of tuberculosis, would seem to be beneficial to the great majority of children. The establishment of sanatoriums afloat would render the inland institutions available for a larger number of those who have no liking for the sea.

[1] *New York Medical Journal*, September 13th, 1913.

THE UNIVERSITY IN MEDICAL EDUCATION.

Any one who will be at the pains to read consecutively the concluding part of Dr. Hunter's report as Dean of the Charing Cross Hospital Medical School and Professor Sherrington's address to the students of the School of Medicine of the University of Leeds can hardly fail to be struck by a difference in tone. In the latter there is a note of serenity and confidence in the future which make an agreeable harmony. Professor Sherrington sees the University of Liverpool fulfilling, or beginning to fulfil, its main functions towards medicine and science, and towards the community by which it has been called into existence and in the life of which it plays an important part. It has been recognized in Liverpool, to use his happy phrase, that a university department "to be an adequate school of instruction must be a school of thought." Dr. Hunter is hopeful but not confident; he is in the thick of the fray, and cannot be certain how the contest may go. He recognizes the justice of some of the criticisms of the Royal Commission on existing arrangements for medical education in London, but he does not think the remedy suggested is applicable, at any rate in all its details. He fears, as we all fear, that by a too close imitation of German methods in clinical instruction London may lose more than it can hope to gain.

The University of Liverpool has been in the fortunate position of an architect who has had a clear site, and the development of the medical school, which was the first element of the university, has not been hampered by the necessity of remodelling an existing structure. It has been necessary only to watch over its orderly growth until it has covered the whole of the ground. The University of London has the more difficult task of creating what is practically a new structure while retaining all that is good in the old.

Some years ago there was a real danger of a divorce between laboratory work on the one hand

and practical medicine and clinical teaching on the other. This danger was primarily due to the uncertainties of physiology and the necessary complexity of its methods; it was aggravated by the tendency of some physiologists to specialize too soon, to approach physiology direct, and not through the gateway of a full education in medicine. That this danger is, as we believe, passing away must be attributed, as Professor Sherrington hints, to the growth of pathology, which by its outlook and methods forms a connecting link between physiology and medicine. It has caused the physiologist to see that no hard-and-fast line can be drawn between the study, especially the experimental study, of normal and deranged processes; to quote another happy phrase from Professor Sherrington's address, the laboratory of pathology has become a "nodal point" within the medical school. It sends out one filament of communication to physiology and the other to clinical medicine. The first has been connected up, but there is a difficulty about the other. It will be overcome, and the recent experience of the Charing Cross school will, directly and indirectly, contribute to its solution. Dr. Hunter is able to give a very encouraging account of the result of the policy adopted by the Charing Cross Hospital school two years ago. The first point in this policy was the transfer of its students for their early medical studies to the King's College laboratories of the University of London. This presented two main advantages: it set free the laboratories in the Charing Cross school building in Chandos Street previously devoted to chemistry, physics and biology, and physiology and anatomy, and it enabled the school to place at the disposal of the university laboratories for the bacteriological and public health departments of King's College. Accommodation was provided for a large class-laboratory, research laboratories, and laboratories for professors and lecturers in each of the departments of bacteriology and public health, with a microphotographic laboratory, preparation rooms, a large theatre and a library for the joint use of the two departments. To King's College the change has proved advantageous, not only by providing better accommodation for its bacteriological and public health work, but also by setting free the laboratories vacated by these departments at King's College for the increased accommodation needed by the departments of physiology, psychology, and zoology of the college. To the school the advantage has been that the whole building in Chandos Street retained by it is now entirely devoted to final laboratory study and research, and that it has been possible to expend a total of £1,500 on laboratory teaching, equipment, and research. The effect on the number of students at the Charing Cross school and at King's College has been very remarkable, as Dr. Hunter's statistics show. The conclusion to which the recent experience of the Charing Cross school is held to lead is that a modified policy of concentration is feasible and will be advantageous, and that the existing hospital system will not prove an insuperable difficulty if utilized in accordance with the English traditions of clinical medicine. Students of the university, if given a free choice in the selection of university departments to attend, will, it is held, always concentrate for work in those departments. There remains, of course, the financial difficulty, which Dr. Hunter discusses at considerable length. He gives a comparison of the expenditure of a German university with the expenditure of a London medical school having a comparable number of students; this appears to show that in the German university more than two-thirds of the total cost of the education of each student is contributed by the State, whereas in the English school only one-third of the total is received in the shape of education grants.

THE ASSOCIATION'S NON-PANEL MEMBERS.

From a statement furnished to the *Times* by Dr. Charles Buttar, one of the Representatives of the Metropolitan Counties Branch on the Central Council of the British Medical Association, we learn that a Non-Panel Medical League has been formed and is engaged in federating non-panel associations. The statement of the origin and objects of the Non-Panel Medical League put out by Dr. Buttar contains the following passage: "In the meantime the British Medical Association, in its endeavour to consider the interests of all its members, has not hitherto found either the time or the energy to develop strong action on behalf of its non-panel members, while its future action is bound to be limited largely to attempts at ameliorating details in panel conditions." This paragraph contains two propositions, neither of which can, we think, be maintained. The complaint of non-panel practitioners against the British Medical Association, as we understand, and we are very anxious not to misinterpret their position, is mainly that the Association has failed to support them in their demand that Insurance Committees should sanction on a large scale applications of insured persons to be allowed to "contract out," that is to say, to make their own arrangements in accordance with the provisions of the Act to that effect. It may be well, therefore, to again review the history of this matter. The Act of 1911 gave power to the Insurance Committee of any district to allow insured persons to make their own arrangements for medical attendance and treatment. But the power was purely permissive, and experience showed that Insurance Committees were very indisposed to make use of it. In not exercising this power of allowing insured persons to make their own arrangements, we are of opinion that the Insurance Committees made a great mistake in tactics. Had they exercised the power on the lines desired by the non-panel practitioners, at the same time guarding against such abuse of it as has been attempted in some districts—as, for example, South Wales—they would have removed a serious cause of friction. As, however, Insurance Committees generally failed to exercise their power in this respect, it was suggested by members of the Association who did not wish to join panels, that it should be made compulsory on Insurance Committees to grant permission, on the demand of the insured person properly made. The State Sickness Insurance Committee and the Council went very thoroughly into the question, which had to be regarded from more than one point of view, for it was apparent that an unlimited extension of contracting out, though it might be useful and advantageous in certain districts, such as South London, might prove very injurious in other districts, especially in those in which schemes were already on foot to extend the operations of existing medical aid associations, and to bring new ones into existence. Eventually a clause was drafted, and approved both by panel and by non-panel members, for insertion into the amending bill of last session. It proposed to require Insurance Committees to grant the right to contract out under suitable conditions, and was introduced into the House of Commons by Sir Philip Magnus and Sir Henry Craik. It was opposed by the Government, and received no serious support from any part of the House. Nothing more could be done in this way, and as a matter of practical politics it seems clear that no help in this direction is to be expected

from any political party. If the object aimed at is to be attained it must be by some other method, yet the present time, when this question of an alternative policy has to be considered, is selected by a number of non-panel members to sever their connexion with the Association, and to make a demonstration which, so far as it has any effect, must tend to diminish its sources of information and its influence with Parliament and on public opinion. It seems rather a short-sighted course of action, more likely to retard than to advance the policy of those non-panel members who have adopted it. The lesson of the past is that only through the unity of the profession can anything be won or retained. We had supposed this to have been accepted as axiomatic, and the suggestion to form a medical trade union, which had the active support of some of those who are now forming a Non-Panel Medical League, seemed to prove that the lesson had been learnt, for a trade union could only be an effective piece of machinery if it succeeded in enlisting at least 85 or 90 per cent. Dr. Eustar's second proposition, that the future action of the British Medical Association is bound to be limited largely to attempts at ameliorating details in panel conditions, is a pure assumption on his part and is not borne out by the facts. Incidentally it may be pointed out that the Insurance Act Committee has appointed all its non-panel members to be a sub-committee to watch the interests of non-panel practitioners. But the Committee has kept constantly before it also the need for united action to resist further encroachments, and it is on this ground that the expression "won or retained" has been used above. It must be remembered that dissatisfaction with the terms and administration of medical benefit is not limited to the medical profession or any section of it. The friendly societies are dissatisfied for quite other reasons, and at their National Conference the other day decided to continue to take action "to secure the transference to approved societies of the administration of medical benefits under the National Insurance Act." In addition we have to take account of those, both within and without the profession, whose ideal is a whole-time State service, and who, perhaps, see in the extension of medical aid institutes a long step in the direction they desire to take. This scheme, it may safely be assumed, would be as distasteful to non-panel as to panel practitioners; it is a matter on which they can act together, and must act together, if the support of public opinion is to be obtained in resisting the scheme, for the propaganda in its favour is active and persistent.

THE MEDICAL REGISTER.

The Registrar of the General Medical Council makes his annual appeal to all members of the medical profession to take care that their names and addresses are correctly recorded in the *Medical Register*. As he points out the *Medical Register* is the only official publication, and legal qualification is not complete unless a practitioner entitled to registration takes care to see that his name is maintained on the *Register*. The Registrar is required to address his official communications to the address registered with the Council, but he makes use of any other source of information to get into touch with a practitioner who may have changed his address. Whatever pains may be taken, —and we are confident that great trouble is taken—the results of casual information must be haphazard, and if the Registrar does not receive a reply he is bound by statute to remove the name from the *Register*. He therefore appeals to any practitioner who may have a doubt as to the accuracy of his address in the *Register* to communicate with the Registrar of the General Medical Council, 299, Oxford Street, London, W., without delay. This request is made primarily in the interests of individual practitioners, but it is also of importance to the profession as a whole that the *Medical Register* should be accurate and complete.

The letter from the Registrar deals also with another matter to which we have frequently called attention: he reproduces the resolution adopted by the General Medical Council on November 30th, 1911, calling the attention of all registered practitioners to the importance of exercising the utmost care in signing certificates in their professional capacity for subsequent use either in courts of justice or for administration purposes. The resolution of the Council contains a list of certificates, but its warning extends to all certificates granted by medical men. Cases occur from time to time which show that medical men in the pressure of practice have not always considered all the circumstances before giving certificates, and a recent case in which a medical man was placed in a position of great peril in giving without due inquiry a certificate in relation to a Foreign Office passport will probably be fresh in the memory of readers.

THE BOARD OF TRADE COLOUR VISION TESTS.

Since the report of the Departmental Committee on sight tests for seamen was issued, in May, 1912, the methods recommended and adopted by the Board have been adversely criticized, and unanimous resolutions condemning them have been passed by more than one congress of ophthalmic surgeons, and in addition many of the members of the Ophthalmological Society of the United Kingdom signed a memorial declaring the methods to be unsatisfactory. During the past year Holmgren's wool has been declared to be utterly inadequate and unsatisfactory by Freeland Fergus, of Glasgow, by Professor Stargardt and Dr. Olaff, of Kiel, and by Dr. Horniker, of Triest. Professor Stargardt and Dr. Olaff, who have had large experience in testing men for the German navy and railway service, in a paper which appeared last year in the *Zeitschrift für Augenkeilkunde* and was translated in the *Ophthalmoscope* (vol. xi, No. 2), say that the test must be "utterly discarded." Horniker, writing in the *Zeitschrift für Augenheilkunde*, August-September, 1913, states that Holmgren's test cannot unmask all cases of colour blindness, and must therefore be discarded as untrustworthy. Freeland Fergus, in *Eyesight and Navigation* (Sherratt and Hughes, 1913), condemns the test because it rejects candidates with normal sight, thus between 1894 and 1909 out of 82,212 seamen 813 failed to pass the colour-vision tests, and of these 87 on appeal passed the more stringent tests applied in London! He explains at length in his short pamphlet of thirty pages why this must be so. The class of man examined is not accustomed to matching colours, and there is the personal view of the examiner as to what constitutes a match. An instance which occurred recently illustrates the matter. A boy was asked to match a blue-purple skein; he selected a magenta as a match. When asked the difference between the two, he at once said the purple contained more blue, the magenta more red; both were in a sense purple, and yet many examiners would have rejected him. Fergus does not think that there is much evidence that a dangerously colour-blind man would be able to pass the test, but many surgeons who have studied the question would not agree with him in this. He adds that many of the Board of Trade examiners consider the wool test unsatisfactory. The Committee, it will be remembered, advised the addition of a lantern test, and suggested a lantern test which is now in use. It is a crude apparatus, with no modifying neutral glasses. In consequence, it cannot detect those very dangerous individuals who have a spectrum shortened at the red end. The boy alluded to above had been rejected by the Royal Navy examiners, and was brought for the purpose of proving if he were really colour blind. He named every colour in the Edridge-Green lantern, and the question arose whether the navy had made a mistake; but at last he was shown a red with the deepest neutral glass. He said: "I see no light at all"; but after some seconds he said, "It's red." The test was repeated

with an identical result. The boy matched colours well, except that he put some greys in with pink. He named them all correctly. He would have passed the Board of Trade lantern easily, and yet he obviously had a shortened spectrum at the red end, and would be exceedingly apt to miss a red light in foggy weather. Freeland Fergus considers the Board of Trade form test too stringent. He himself has astigmatism which reduces his visual acuity to $\frac{6}{18}$ in each eye, and yet he is able to navigate his yacht perfectly and to pick up buoys and lights easily. Another surgeon known to us who has a dioptre of myopia which reduces his acuity to $\frac{6}{36}$ barely, yet navigates small yachts, and hitherto with security. But the navigation in summer of a small yacht which rarely exceeds the speed of six knots, is a very different thing from navigating a twenty or even fifteen knot steamer, and the Board of Trade has been wise to raise the standard of form vision. The German authorities recommend the use of Stilling's cards used in conjunction with Nagel's and Cohn's tests. Doubtful cases are referred to a central station to be examined with Nagel's anomaloscope, which utilizes the Rayleigh equation. But Horniker points out that colour-blind persons have passed the anomaloscope test and some normal persons have failed. He very sensibly adds that no single test can be regarded as sufficient for all cases. Stilling's test is probably the best pigment test, but it should always be supplemented by the Edridge-Green lantern. British railways are still more conservative than the Board of Trade, and many ophthalmic surgeons know of cases of colour-blind engine drivers who regularly pass their antiquated tests.

THE COPENHAGEN COMMUNAL HOSPITAL.

THE history of the Communal Hospital in Copenhagen has been published by the Town Council, in connexion with its fiftieth anniversary. This publication, which forms the basis of an interesting paper in the journal of the Danish Medical Association,[1] gives a bird's-eye view of remarkable developments during the last half-century in the organization of a large hospital. The broad outlines of this development are common to the whole civilized world; and the history of this hospital is also the history of medicine in Europe since the antiseptic era began. The first impulse towards the foundation of a large communal hospital was given in 1853 by an epidemic of cholera which exposed the alarming shortage of hospital accommodation, not to mention the insanitary state of the town in general, and of the hospitals in particular. These can scarcely have given satisfaction to any living thing save the vermin which infested them; and it is little wonder that "hospital" diseases were so prevalent. A commission appointed in 1853 decided in favour of a new hospital with 600 beds, and a site was chosen adjoining the town's fortifications, on the condition that sufficient space should be reserved for their extension. The mounting of guns within the precincts of the hospital was, however, never realized, and the neighbouring fortifications were not kept up. Ultimately, accommodation for 800 patients was decided on, and when the hospital was opened, in 1863, the total cost had mounted to about three million kroner. Admission was free to all except prostitutes under observation, incurable paupers, and the subjects of such diseases as scabies. Even after the lapse of fifty years, the buildings satisfy modern requirements; no radical alteration has been necessary, and the minor changes introduced have not affected the main structure of the hospital. The credit for this achievement, at a time when the architecture of hospitals was no acknowledged science, is due to H. C. Hansen. At first there were two medical departments—one surgical, and one for venereal and skin diseases. A fifth, a combined medical and surgical department, was instituted in 1870 under the impression that the distribution of patients should rather be based on the nature of their diseases than on the treatment prescribed. Five years of this experiment demonstrated its unwisdom, and the fifth department became purely surgical. In 1905 the number of beds had risen to 1,008, and there were separate departments for diseases of the nervous system, and for diseases of the ear, nose, throat, and eyes. The hospital was the first in Denmark to carry Lister's teaching into practice. Dr. Holmer's report in 1868 on the use of carbolic acid in the treatment of wounds at the hospital was decidedly favourable; and the new teaching of surgical cleanliness revolutionized the entire conduct of the wards. Until 1876 nursing was carried out by a no doubt worthy, but a certainly uneducated, class of women, employed by the week. The women who attended the sick by night were paid by the night—an arrangement which must have attracted only an inferior type of Mrs. Gamp. These crones were doubtless in keeping with their surroundings, but with the passing of the old order their position became somewhat anomalous, and they gradually left the service of the hospital. The introduction of highly trained lady nurses was for a long time tentative and confined to the female wards; and it was not till 1888 that the sphere of lady nurses' activity was extended to the male wards, where their beneficial influence soon made itself felt. The fact that while the number of patients has increased by 40 per cent., the nursing staff has increased during the same period by 80 per cent., is a further index to the improvement which nursing has undergone. Another great change is the increased cost of living, the daily cost of maintenance for each patient having risen from 1 krone 27 öre to 4 krone 41 öre. Since the hospital was opened the average number of days in hospital for each patient has risen from twenty-seven to thirty-five. This apparent retrogression is at first sight no flattering comment on modern therapy; but the increase in the days of invalidity partly coincides with the prolonged, systematic treatment of tuberculosis; and the first year in which the number of days in hospital rose to thirty coincides with the opening of the communal sanatorium in 1901. Again, many patients now undergo a tardy convalescence who, in the "good" old days of the septic era, would speedily have quitted the hospital—feet foremost.

[1] *Ugeskrift for Laeger*, September 18th, 1913.

THE VALUE OF THE PEPTIC INDEX.

SOME months ago we referred in these columns to a paper by Drs. Schryver and Singer in the *Quarterly Journal of Medicine* on the results of gastric analysis, and in a recent communication published in the *Deutschen Archiv für klinische Medizin*, Bd. III, Dr. Singer has further explained the conclusions to which they have been led. The peptic index, as determined by their modification of Fuld's edestin method, is in their opinion a valuable addition to our means of clinical diagnosis, which presents no practical difficulty, except the need for keeping the edestin solution in a cold place. Edestin is a crystallized albuminous substance derived from vegetable seeds. Dr. Singer describes the method of employing the test as follows: Edestin is purified by recrystallization from warm salt solution, and the purified preparation is dissolved in the proportion of 0.1 per cent. in 0.12 per cent. hydrochloric acid. Of this solution, 2.5 c.cm. are poured into each of 10 test tubes, and allowed to stand at the ordinary temperature of the room; 1 c.cm. of filtered stomach contents is diluted to 10 c.cm., and then 0.1, 0.2, 0.3, and so on, in a gradually increasing series up to 1, of diluted stomach contents are added to the solution in the tubes, which are shaken and allowed to stand for half an hour; at the end of this time 0.3 c.cm. of a saturated solution of common salt are added to each tube and the tubes again shaken; at a certain degree

of concentration the solution remains clear, but with less digestion a white precipitate forms. The number of decimal parts present in the first clear tube must be divided into the number 100, and the result is the "peptic index," which is always expressed by one of the following numbers: 100, 50, 33, 25, 20, 17, 14, 12, 11, and 10. For greater accuracy intermediate quantities of the stomach contents may be added, strongly acting juice may be more diluted and feebly acting may be less diluted, but for ordinary practice these ten tubes are sufficient as with a little experience it is possible to read between the figures; in those cases where all the tubes remain clear the index is over 100. This method has been used in more than 300 cases of stomach diseases of all kinds, and the following conclusions have been arrived at: (1) That the estimation of the peptic index by the edestin method affords a useful help in the diagnosis of organic disease of the stomach and duodenum. (2) That peptic index and the chloride secretion vary ordinarily in the same direction when the wall of the stomach is the seat of organic disease, and when there is an exception to this rule it generally occurs in the form of a relative lowering of the peptic index. (3) In the early stages of duodenal ulcer the peptic index is ordinarily high (over 60) and the secreted chloride also high (over 6); in the experience of the authors this is almost pathognomonic of duodenal or pyloric ulcer. (4) In advanced and developed cases of duodenal ulcer the peptic index may be low; in very chronic cases the chloride secretion may also fall. (5) Cases of pyloric ulcer follow the same rule as cases of duodenal ulcer, but in the former the peptic index is ordinarily somewhat lower. (6) Gastric ulcers not seated at the pylorus show no definite alteration of the index, but it is ordinarily somewhat low. (7) Cancer of the pylorus generally leads to slight lowering of the peptic index and the chloride secretion, but in the early stages the chloride secretion may even be raised (8) Cancer of the stomach which has spread to the small curvature from the pylorus causes always marked lowering of the peptic index and nearly always that of the chloride secretion. (9) Chronic appendicitis with gastric symptoms may be accompanied by organic changes in the stomach, but these may also be absent. A definite relative raising of the peptic index over the chloride secretion is met with chiefly in those organic diseases which are combined with appendicitis.

QUADRUPLETS AND THEIR MOTHERS.

A QUADRUPLET pregnancy and labour has recently been reported in the *Muenchener medizinische Wochenschrift* (No. 515, 1913) by Dr. Hans Hauser, who adds instructive statistics about the maternity of triplets and quadruplets. His quadruplets were two males, each a little over 17 in. long, and one about 3 lb. 3 oz., and the other 2 lb. 3 oz. in weight; and two females, one over 16½ in. and the other over 17 in. in length, weighing 2 lb. 3 oz. and 2 lb. 4 oz. respectively. All four children died within a few days. The placental condition was remarkable; there was one pair of one-yolk twins, whilst each of the other twins had a placenta and amniotic cavity to itself. Injections proved that the vessels of the two separate placentae had no communication with those in the placenta of the one-yolk twins. This kind of coincidence, of course, explains many cases of the kind. One-yolk twins associated with a solitary child having its separate placenta are seen in triplet pregnancies, but the chance of a second child with distinct placenta, as in this case, is highly improbable. Hauser shows that, according to statistics, the average age of mothers of quadruplets is higher than that of the mothers of triplets, whilst the latter are on an average older than women who bear twins. The more multiple the children in one pregnancy, the more rarely are the mothers primiparae. An overwhelming proportion of the mothers who bear quadruplets are multiparae—parents of six or more children—whilst among the bearers of twins and triplets the majority has borne from two to five children.

RUBBER DERMATITIS.

C. VIGNOLO-LUTATI[1] describes two cases of professional or occupational dermatitis occurring in the interdigital clefts of the hands of two young men working in a rubber factory. Both had their hands constantly wetted with a solution of india-rubber in benzine; the only parts affected were the second, third, and fourth interdigital clefts, over areas corresponding to the contact of one finger with another. Both were at work for about a month before the dermatitis arose, and had found difficulty in cleaning away the last traces of the sticky mixture from between their fingers when the day's work was done. The lesion began with redness and itching, and progressed rapidly, with swelling and pain; the first patient was cured by Hebra's ointment in a fortnight. The second showed small miliary, reddened vesicles, some intact, others broken and displaying a macerated floor with a few shallow cracks in it; this eczematous lesion ended abruptly as the palm or dorsum of the fingers was approached, so that the hand looked normal when the fingers were held in apposition. The first patient had never had any skin disease before; the second, aged 19, had had eczema of the crutch and thighs nine years previously, which might be taken as evidence of a special vulnerability of the skin. Inquiry made at the factory showed that a number of workmen had been obliged to give up similar work on account of similar eczematous dermatitis.

SMALL-POX IN AUSTRALIA.

WE have received from a correspondent a copy of a Tasmanian paper containing information down to August 17th of the epidemic of small-pox to which our correspondent in Sydney made reference in a letter written on July 15th (JOURNAL, August 30th, p. 572). It is stated that twenty-one cases were notified between August 15th and 17th; all, it is added, occurred in suburban areas where scanty use had been made of the free public vaccination stations. One of the patients was the wife of the coachman of the Governor of the State; the coachman and his child had been vaccinated, but his wife had refused. Another case occurred in a ticket collector on the railway, and Dr. Paton, the President of the Board of Health, has pointed out that neglect of vaccination by railway employees was particularly regrettable. On August 17th there were 68 small-pox patients and 107 convalescents at the quarantine station at North Head, where since the beginning of the epidemic 500 persons had been isolated. Although the number of persons resorting to public vaccination stations had declined, 1,216 were vaccinated on August 15th and 16th.

DR. HIDEYO NOGUCHI will give a demonstration at a meeting of the Royal Society of Medicine to be held on Monday, October 13th, at 5.30 p.m., of the results of his recent investigations, most of them carried out at the Rockefeller Institute for Medical Research, of which he is an Associate. He will show pure cultures of various pathogenic and saprophytic spirochaetes, will demonstrate the presence of *Treponema pallidum* in the brain in cases of general paralysis, and will show experimental general paralysis in rabbits. He will also make a statement and give a demonstration of his recent cultural studies of the virus of rabies.

[1] *Il Morgagni*, 1913, lv, Part 1, 271.

Scotland.

[*FROM OUR SPECIAL CORRESPONDENTS.*]

Tuberculosis Treatment in Edinburgh.

At a meeting of the Burgh of Edinburgh Insurance Committee held on September 25th, when Mrs. Leslie Mackenzie presided, a question was asked by Lady Carlaw Martin concerning the opposition of the Medical Benefit Subcommittee to the proposal that the maximum penalty for offences in the case of deposit contributors should be lower than that passed on offenders who were members of approved societies; she moved that a distinction should be made between the two classes. Mr. J. Simpson, Convener of the Medical Benefit Subcommittee, explained that it did not necessarily follow that the Committee would fine deposit contributors the maximum penalty, but it was needful that the Committee should have some discretion in the matter. There was no seconder for the motion, and it was accordingly dropped. Lady Carlaw Martin also asked whether the Committee would be liable for any part of the extra £100 which the town council had decided to add to the £500 previously mutually agreed upon in the case of the appointment of Dr. Guy, the new tuberculosis officer (vide JOURNAL for August 2nd, p. 279, and for August 9th, p. 345); the answer was that the Committee could not be held responsible. A discussion then took place upon the domiciliary treatment of tuberculosis, Mr. Simpson asking what rules and regulations existed in regard to people who were admitted to the sanatoriums and then discharged; were these cases being followed up, was every case seen, was domiciliary treatment given, and of what did it consist? A case was cited in which the need for some such treatment seemed great. Mrs. Leslie Mackenzie stated that the same question had been discussed at the meeting of the Sanatorium Subcommittee, where it had been agreed that the making of rules should be delayed until the new medical officer took up his duties on October 1st. After further remarks by Lady Carlaw Martin, Dr. Robertson, and Mr. Guthrie, the matter was allowed to drop.

Termination of the Edinburgh Annual Post-Graduate Courses.

The Edinburgh Post-Graduate Courses in Medicine for 1913 closed on Saturday, September 27th. The courses have been the most successful yet held during the eight years that have elapsed since the restarting of systematized post-graduate teaching; 111 doctors have taken out the classes, and of these 9 attended more than one course and two attended all the three courses; last year the total number was 99, and the highest number in any previous year was 109. Of the 111 graduates, 32 came from England, 3 from Wales, 16 from Scotland, and 7 from Ireland; 21 came from the United States of America, 6 from Canada, 6 from India, 5 from Australia, 3 from New Zealand, 2 from Ceylon, 2 from South Africa, and 2 from Trinidad; and there was 1 from each of the following countries: China, Russia, France, Italy, Channel Islands, and Persia. The five o'clock afternoon lectures were again well attended not only by those taking out the courses, but also by members of the profession in Edinburgh. One of the most interesting of the series was that on the "Control of Syphilis," by Dr. Woods Hutchinson, of New York, who gave important information regarding the results of the notification of the disease in New York.

Health Matters in Fife.

Dr. G. Pratt Yule, the medical officer for Fife, in his annual report for 1912, states that the number of deaths registered during the year was 1,314, and that there was a marked diminution in the mortality-rate of the county as a whole. There would be a further decrease as the housing conditions improved, but unfortunately there was a large class of tenants of two- and three-roomed houses who, irrespective of the size of the family, would not avail themselves of any accommodation other than that of the kitchen. It seemed to be almost the rule for the tenant to sublet the room or rooms to separate families, so that a house of three apartments became three one-roomed houses. The total deaths from tuberculosis numbered 125; of these 64 were from phthisis and 61 from other tuberculous diseases. The phthisical death-rate was 0.6 per 1,000, and was lower than that of 1911, which was 0.7. There had been 96 deaths from malignant disease during the year. This was 4 more than in 1911, and was equivalent to a rate of 0.90 per 1,000. It was satisfactory that the deaths from phthisis were decreasing notwithstanding the steady increase in the number of the population.

The Edinburgh Parish Council and the Royal Infirmary.

At a meeting of the Edinburgh Parish Council on September 22nd, a letter was read from the treasurer and clerk of the Royal Infirmary, requesting the usual contribution of £150 to the funds. Mr. Smith moved, and Mr. Given seconded, that the whole question be reconsidered, and that therefore it be remitted to the chairman's committee for report. Mr. Smith gave as reasons for his motion the altered circumstances in the infirmary management in connexion with the Insurance Act, and the fact that the council would not require any beds in the infirmary for mental cases, and it was putting up a mental hospital. The chairman pointed out that the council's mental hospital could not be ready within twelve months, and expressed the hope that the council would not interfere this year with the contribution, remarking that the matter might be taken up and discussed on its merits before another contribution fell due. Mr. Foster moved in terms of the chairman's suggestion, and Mr. Forbes, in seconding, said that the infirmary managers were not the only people who were in difficulties regarding the Act. Mr. Smith withdrew his motion, on the understanding that a report on the subject would be submitted during the year, and Mr. Foster's motion was unanimously agreed to.

Ireland.

[*FROM OUR SPECIAL CORRESPONDENTS.*]

The Fear of Infection in Tuberculosis.

It would appear that the general public in Ireland and in the neighbourhood of Dublin especially have become obsessed with an exaggerated idea of the danger of infection in various forms of tuberculous disease, and it is only necessary for a suggestion to be made to build a sanatorium in any district, no matter how remote from the city, for an outcry to be raised that the seeds of tuberculosis are being sown broadcast over the neighbourhood. It may be remembered that such an outcry was raised about eighteen months ago, when the Peamount Sanatorium some fifteen miles from Dublin was first started. A similar outcry arose when a scheme was mooted for adding a special wing for tuberculous cases to the Royal Hospital for Incurables situated on the outskirts of Dublin; this scheme has since fallen through, but quite recently another scare has arisen over a scheme to build a sanatorium, for surgical cases only, at the foot of the Dublin mountains over five miles from the city and in a sparsely inhabited neighbourhood; and the following resolution was adopted by the Dublin Insurance Committee arising out of recent complaints:

> That the Dublin Joint Hospital Board be approached with regard to the question of keeping occupants of the Crooksling Sanatorium confined as far as possible to the grounds of the institution, or at least off the public roadway.

An Irish Garden City.

An interesting experiment in the provision of suitable dwellings for labourers is fast approaching practical shape in Gorey, co. Wexford. This garden city site of 36 acres immediately adjoining the town of Gorey, has been bought by the Rural District Council for £2,000, and sixty-five cottages each with a plot of ¼ acre are to be erected at a cost of £10,000.

The place is already equipped with a village hall. The streets will be laid out as avenues, bordered by trees and shrubs. The cottage and plot will be rented for about 1s. 6d. a week. There will be no difficulty in finding willing occupiers, as the applications to the Council far exceed the number of cottages to be built. The cost, it may be seen, is not more than the average, and the great benefit in the health, comfort, and happiness of the

labourers, who will have a community of their own, instead of the usual isolated existence of lonely wayside dwellings, may warrant other districts in providing similar schemes.

MONAGHAN ASYLUM.

The Monaghan Board of Guardians has unanimously adopted a resolution requesting the Monaghan representatives on the Joint Committee of the Monaghan and Cavan Asylum Board to oppose strongly the adoption of the Local Government Board's report on the recent inquiry deciding that Cootehill Workhouse should be converted into an auxiliary asylum.

England and Wales.

[*FROM OUR SPECIAL CORRESPONDENTS.*]

WALES.

THE RHYL ROYAL ALEXANDRA CHILDREN'S HOSPITAL AND CONVALESCENT HOME.

WE have received the following letter, dated September 29th, from the Bishop of St. Asaph, Vice-President of the Hospital:

With reference to your comments upon the above institution, I beg to state, on behalf of the Committee of Management, that it is in no sense a general hospital. It was founded in 1872, under the above title, as "a convalescent hospital or home for the reception and treatment of such sickly children and others as are likely to benefit in health by residence at the seaside." It was thus intended, like the men's and women's convalescent homes in Rhyl, to receive patients from the large towns and inland places, and not from Rhyl itself.

It depends for its maintenance upon the support of some 683 annual subscribers, of whom only 38 reside in Rhyl, who are entitled to nominate the patients to occupy its beds. Suitable cases thus nominated are admitted in order of application on Mondays and Thursdays, and throughout the summer there are always many more applications than there are beds. Last year 724 patients came from England and 269 from Wales. These facts clearly indicate the character and purpose of the institution.

But in the absence of any local hospital in Rhyl, the committee have endeavoured from time to time in various ways to meet the needs of the town and its immediate neighbourhood, and cases of urgency have been admitted for treatment. The hospital also undertakes the nursing of the sick poor in their own homes. It has a free cot, established in 1897, for the use of Rhyl children, and in 1900 a men's accident ward was added for cases of accident to men in Rhyl.

But these concessions in the interests of the locality in which the hospital happens to be placed cannot be allowed to alter its fundamental character.

It must be clearly understood that urgent acute cases, outside the scope and intention of the foundation, can only be received by special arrangement, and then only when they can be admitted without detriment to the other patients, or interference with the regular work of the institution.

There is no resident house-surgeon, and therefore in all emergency cases requiring immediate attention arrangements must be made with one of the medical staff, who would then take charge of the case, and inquiry must be made at the hospital whether under existing circumstances as to accommodation, etc., the case can be received.

You were evidently not aware of these facts when you published your article last week, although they are well known to every medical man in Rhyl.

In the case to which we directed attention a member of the institution's own professional staff pleaded for the admission of a child, and was himself ready to undertake the operation urgently required. In view of this circumstance and of the evolution which the institution has, according to our correspondent's own statement, undergone since the date of its foundation, his objection to our describing it as a general hospital so far as children are concerned seems rather strained. Even if the institution never admitted any but convalescent or purely chronic cases its affairs could not be regarded as judiciously administered so long as its managing body had to admit that even in a grave emergency hot water and adequate light could not be obtained at night time.

India.

[*FROM OUR SPECIAL CORRESPONDENTS.*]

THE FUTURE OF THE INDIAN MEDICAL SERVICE.

THE following is the text of the letter on the restriction of the private practice of officers of the Indian Medical Service addressed to Provincial Governments by the Government of India on May 23rd, 1913:

The Government of India have under consideration the question of placing further restrictions in the matter of general private practice upon Government medical officers holding professorial appointments. Neither the Government of India nor Local Governments have been unmindful of the objections to allowing these officers unrestricted liberty in the matter; but although private practice has been denied altogether to certain professors, and others have been restricted to consulting practice, there have been practical difficulties in the way of introducing any uniform arrangements. The result has not been entirely satisfactory; and, in view of the altered conditions resulting from the recent growth of a considerable independent medical profession, the Government of India desire that the question should now be further examined. They propose at present to limit the scope of the present inquiry to the Presidency towns of Madras, Bombay, and Calcutta and to Lahore and Lucknow; and they have no intention to interfere with the privilege enjoyed by officers who may happen to hold as collateral charges the principalships of medical schools at outstations.

2. The objection to unrestricted private practice may be regarded from two points of view: the professional and the administrative. It is on the latter ground that certain medical officers holding principalships of colleges or in administrative charge of large hospitals have been restricted to consulting practice; but with such considerations, however important, the general public are only remotely concerned. But the Government of India discern a growing body of criticisms directed against the liberty still allowed to medical officers who hold professorial appointments, particularly in the Presidency towns, to take up annual contracts as family doctors upon terms with which the private practitioner finds it difficult to compete. They feel that there is force in these objections, and they are inclined to the view that all officers holding professorial chairs in medicine, surgery, gynaecology, or ophthalmology in Government medical colleges should be strictly debarred except as consultants from general private practice, though they may be permitted to practise unfettered that branch of their profession in which they are accredited specialists, unless their administrative duties as principals of colleges or superintendents of hospitals render some further restriction necessary. The recognition of professors in medical colleges as specialists would, in the opinion of the Government of India, not only add to the dignity of the medical service and provide a number of officers with the additional leisure for scientific work, but would also tend to allay any jealousy which may at present affect the relations between the Indian Medical Service and the independent medical practitioner in this country.

3. The Government of India would be glad if the Governor in Council will take the foregoing observations into consideration and will furnish them with the information as to the extent to which the classes of officers referred to at present enjoy the privilege of private practice, and how far, in the opinion of the local Government, it is expedient to impose restrictions suggested.

LADY MINTO NURSES IN ASSAM.

An attempt is being made in Assam and the Surma Valley to enlarge the scope of the Lady Minto's Nursing Association. The Branch Nursing Association was remodelled when the province reverted to a Chief Commissionership, and financial support is now needed to prevent the branch from becoming injuriously affected. It is rightly urged that it is to the interest of every planter to subscribe towards the upkeep of the branch, and every effort is being made to set its finances on a sound basis.

Lady Grover's Hospital Fund.

Institutions such as Lady Grover's Hospital Fund for Officers' Families depend for their success on the support from the public, and on their popularity with the class for whose assistance they are designed. We are glad to learn that there has been a considerable increase recently in the number of subscribers to the above fund, largely attributable to a change in the rules which allows a grant in aid of £2 10s. a week being made to ladies who prefer to be treated in any home they may select in the United Kingdom, and permits regimental units to obtain the benefits of the fund by paying two subscriptions for three ladies, four subscriptions for six ladies, and so on in proportion. Since this modification of the rules twenty regiments have joined the fund.

Gifts for Education.

The Senate of the Calcutta University has accepted Dr. Rash Bahari Ghosh's gift of 10 lakhs of rupees for the promotion of scientific technical knowledge. The Maharaja of Jaipur has sent Her Excellency Lady Hardinge a munificent gift of 3 lakhs of rupees as a contribution towards the establishment of a women's medical college at Lahore.

Floods in Bengal and Bihar.

The disastrous floods in parts of Bengal and Bihar have caused great distress among the people; though the loss of life has been trifling. Epidemic malaria usually follows upon the inundation of large areas, and it is feared that fever will set in with more than usual severity during the autumn. The two local governments concerned will doubtless recognize the danger that has to be faced, and send to the districts likely to be affected ample supplies of quinine, but special arrangements should be made to provide a medical staff equal to grappling with an epidemic of malaria, and the services of the malarial officers, experts at their work, should be utilized at an early date.

Calcutta Open Spaces.

The provision of open spaces in Calcutta is one of the many topics dealt with in the annual report of the retiring chairman of the corporation. Every class in the community has an interest in the subject, which may be usefully discussed at a time when the Improvement Trust is on the threshold of its work. The redeeming feature of Calcutta in this respect is the Maidan, with its fine expanse of over 1,000 acres. The Maidan, however, does not meet the needs of the whole city, nor do the thirty-six squares which are under the charge of the corporation.

The Health of Indian Gaols.

In the report for the year 1912 on the gaols of the Bengal Presidency, Colonel Buchanan, the local Inspector-General of Prisons, has some instructive remarks on healthy and unhealthy gaols. In seven of the former there were no deaths at all, and in three other the rate was under 10 per cent. In the large central gaols, too, the standard was as good as that of any gaols in Europe. It is in the unhealthy districts that the mortality is highest, and five gaols are mentioned as having a very high death-rate. A typical case is said to be that of Barisal, of which Colonel Buchanan writes:

> This has been for years a notoriously unhealthy gaol, and one of the last things I did before the partition of Bengal of 1905 was to submit a special report on the gaol. Very little, however, has since been done; new buildings have been erected, but have only served to overcrowd a radically bad site area. The water supply is as bad as it was eight years ago, and the new supply from the municipal waterworks, supposed to have been opened in March, 1912, has not reached the gaol, though applications for payment of a water tax has been made.

The prisoners have still to drink the water taken from an open tank in front of the gaol, subject to "every pollution that a bazaar tank can receive," and, though the water is boiled before being used, its quality is of the worst. Rangpur and Faridpur Gaols, with death-rates of 57 and 47 per 1,000, respectively, are very unhealthy, just as are the districts in which they are situated, but sanitary and other improvements are being carried out which should lessen the mortality.

Special Correspondence.

VIENNA.

The International Congress on First Aid and Ambulance.

(*Concluded from page 770.*)

Much interest was evoked by a paper on the dangers of sponge-fishing by Dr. Flégel (Crete). He stated that the number of persons directly interested in this industry was about 100,000, and that they worked either with a trident or a search-rope, or by diving with the body naked. Recently the sponge firms had employed divers in special diving apparatus with the result that a large loss of life occurred owing to the considerable depth of the water in which these divers worked. The older methods were much less dangerous owing to the shallowness of the water in which the work could be done. Action had been taken to prohibit the use of diving apparatus in sponge fishing by Austria-Hungary and Egypt, but in Greece, Tunis, and Turkey, though certain regulations existed, they were easily evaded by the firms. Since the firms had been made to pay damages for accidents to the fishermen, however, things had improved, and prophylaxis was more effective.

The old problem of resuscitation of persons apparently dead from asphyxia was discussed by Dr. Kuhn (Berlin). He pointed out that first aid should be applied to such persons more extensively, for experimental researches proved that a successful result might more frequently be obtained, and the human heart more frequently brought again into action than had been supposed, especially in cases of apparent death from suffocation (CO_2 or CO), of drowning, of lightning stroke, or electric shock. Cases in the two latter categories should be regarded as promising, even after hours. Hering had succeeding in causing three hearts out of twelve removed in the necropsy room to beat eight to eleven hours after death. Kulabko succeeded in making two out of ten infants' hearts pulsate, and in general anaesthesia similar results had been observed. The chief point was to remove from the heart the substance causing asphyxia.

Prophylaxis in relation to aeronautics at high altitudes was discussed by Dr. von Schrötter. He maintained that up to 9,000 feet no special precautions were necessary. At higher altitudes it was important to provide against the fall of temperature and of barometric pressure. Sufficient high-grade food (carbohydrates, tea, kola) must be on board the vessel. The body should be protected against the action of the actinic (ultra-violet) rays, by fat, and the eyes by green-yellow glasses (euphos glass). Electric light should be available, as well as an outfit for first-aid, and life belts in case of a trip across the sea. The aeronauts should be perfectly healthy; the functions of the eye, ear, and heart and lungs should always be tested. The outlet of the motor should not contaminate the air used for breathing.

First aid in alcoholic intoxication was discussed in a long paper by Mr. Windt, who complained that at present little had been done. As a rule, the police dealt with these "patients," for such they were, and there was a deplorable lack of arrangements for the transport and detention of alcoholics. They should at once be examined by a medical man, for in about 50 per cent. the intoxication was severe enough to cause more or less complete loss of consciousness. The after-treatment was even more important; it should be psychical, to prevent a recurrence of drunkenness. Homes for inebriates were most urgently required, and anti-alcoholic societies and movements should be favoured by the State.

The organization of first aid on the Austrian State railways was explained by Dr. Bogdan. Special hospital cars and ambulance cars had recently been placed at the disposal of each district railway office; to them was attached a corps of male nurses and a staff of surgeons. First-aid boxes were now part of the equipment of every express train, and first-aid instruction is offered to the servants of the State railways. As a rule, the relative number of railway accidents in Austria-Hungary was very small; in fact, the rate was one of the smallest in

large European countries. Special cars were provided for the transport of infectious patients. The same requirement, as Dr. Hofmokl pointed out, existed in regard to transport from and to hospitals. Each car used for the conveyance of an infectious patient was disinfected as soon as its task was over. The importance of securing a bed for the patient in the charitable institute or hospital before he was taken there was pointed out. In large towns the decentralization of the transport of sick persons should be aimed at, and should be placed under medical supervision.

"The First Dressing of Injuries" was the title of a paper by Dr. Rosner, of the Vienna Ambulance Corps. Wounds, he said, should not be touched or washed, nor probed, prolapsed organs should not be replaced but carefully supported and a simple dressing applied to them. The best was a soft, fine, pliable, aseptic, absorbent substance. Haemorrhage should be checked by applying the dressing with a certain pressure, and in fractures immobilization should be obtained. The first dressing should only be sufficient to enable the patient to be removed to a surgical ward or to his home. Fractures and dislocations should, if possible, be reduced or replaced before dressing, but it should be recognized that the first dressing was of utmost importance for the ultimate fate of the injured person. Professor Schnitzler read a paper on life-saving interference in first aid. The chief dangers threatening life were, he said, interruption of circulation and respiration. The latter could be guaranteed by tracheotomy; in some instances it was necessary to trephine the skull (decompression). In intoxications (morphine, nephritis), venesection might prove most useful in restoring the respiratory equilibrium. Paralysis of the heart must be treated by massage or injection of adrenalin into the cardiac muscle. He considered also the methods of stopping haemorrhage which can be used by non-medical persons.

The "prevention of panic in public buildings" was the subject of a paper by Mr. Greil. He recommended the enforcement of regulations on the following lines in theatres, circuses, and similar buildings where large assemblies habitually gathered; they should be fireproof; the stage should be absolutely separated from the audience by a fireproof (iron) curtain; no one should live in the house; electric light only should be used and should be obtained from two sources; heating should be by hot air or steam from a central point; no smoking should be allowed, and at each performance a detachment of firemen should be present ready for service. No more than three persons per square metre of the area should be admitted, and there should be one exit for each 100 visitors, consisting of one broad door. A sufficient supply of drinking water, of pure air, and of water-closets were necessary.

In a paper read by M. Wortmann (Vienna) on suicides and attempts at self-destruction it was stated that the number of suicides was constantly and rapidly increasing in Vienna; in 1912 the ambulance corps was called to no fewer than 1,387 cases. Various reasons had been assigned for this increase by different observers; psychical depression was most often responsible for such an attempt, and the anti-suicide society (Salvation Army, London) had done much good in this respect. M. Wortmann advised the collection of international statistics in regard to the reasons of suicide. Present time education, with its predominance of individualism and egotistic sentiments, did not, as a rule, harden characters, and brought on early nervous breakdown.

Some other papers: on teaching of nurses; on fire and first aid to save life in conflagrations (a linen tube, a jumping cloth); on coal-dust explosions; on nervous disturbances in mountain climbing, need only be mentioned.

An international committee for first aid has been elected, and this is the most important outcome of the Congress. This committee is to devise means of bringing help rapidly in extensive disasters (earthquakes, epidemics, floods), in the same way as the International Red Cross in war. The exhibitions of first-aid apparatus, as well as the working methods of various first-aid corps, exhibited during the Congress, show what good could be obtained by uniform and systematic work.

A large percentage of those present remained in Vienna after the Congress had been closed, in order to take part in the proceedings of the "Congress of German Scientists and Doctors," which was opened here four days later. This congress, of which some account will be given in my next letter, was on such a large scale that it nearly killed itself by its hugeness.

Correspondence.

ON THE ACCURACY OF THE "MEDICAL REGISTER," WITH A NOTE ON MEDICAL CERTIFICATES.

SIR,—May I once more ask you for your valuable assistance in reminding members of the profession that, unless their names appear in the *Medical Register*, they are not "legally qualified medical practitioners" (Medical Act, 1858, Section 34), and that the duty of notifying changes of address rests with them.

No person can "hold any appointment as a physician, surgeon, or other medical officer either in the military or naval service or in emigrant or other vessels, or in any hospital, infirmary, dispensary, or lying-in hospital, not supported wholly by voluntary contributions, or in any lunatic asylum, gaol, penitentiary, house of correction, house of industry, parochial or union workhouse or poor-house, parish union, or other public establishment, body, or institution, or to any friendly or other society for affording mutual relief in sickness, infirmity, or old age, or as a medical officer of health, unless he be registered" (Section 36); and "no certificate required by any Act now in force, or that may hereafter be passed, from any physician, surgeon, licentiate in medicine and surgery, or other medical practitioner, shall be valid unless the person signing the same be registered" (Section 37).

The *Medical Register* is the only official publication, and it should not be confused with any of the various directories which issue circulars annually.

No one who is not familiar with the work of this office would believe the amount of trouble which is taken to keep in touch with practitioners, and to find them when touch has been lost, but, unless we are assisted by members of the profession themselves, our efforts are often fruitless.

In consequence of cases which have recently occurred, it becomes increasingly important every year that the Registrar should carry out the duty laid upon him under Section 14 of removing from the *Register* the names of practitioners with whom he cannot communicate. It is done with reluctance, but only by this means can the public and the profession be protected against impostors. No doubt cases of hardship do sometimes arise in consequence of this removal of names, but every possible source of information is made use of to save practitioners from the results of their own forgetfulness, and if they are inconvenienced by finding that their names are off the *Register*, the blame does not rest with this office. The duty of notifying changes of address rests with practitioners; the Registrar is obliged to send communications to registered addresses only, but the practice is to make use of every available source of information.

I therefore hope that all practitioners who have any doubt as to the accuracy of their addresses in the *Register* will communicate with this office without delay, and, if they will give their full names and qualifications in legible writing, it will be of great assistance to us. All communications will be duly acknowledged.

Perhaps I may add that, by a recent regulation, practitioners possessing medical and dental qualifications, if already on the *Medical Register*, may register in the *Dentists' Register*, or vice versa, for a reduced fee of £2 1s., instead of £5 1s.

I should like to take the opportunity of drawing attention to the following resolution adopted by the Council on November 30th, 1911; it cannot be urged too strongly upon practitioners that, in giving certificates, they are recognized by law as members of a trusted profession, and that it behoves them to exercise the greatest possible care in the matter:

> Whereas registered medical practitioners are in certain cases bound by law to give, or may be from time to time called upon or requested to give, certificates signed by them in their professional capacity, for subsequent use either in

courts of justice or for administrative purposes: And whereas such certificates include, *amongst others*:

(*a*) Under any Statute relating to births, deaths, or disposal of the dead;
(*b*) Under the Lunacy Acts;
(*c*) Under the Vaccination Acts;
(*d*) Under the Factory Acts;
(*e*) In relation to children or to excusing school attendance;
(*f*) In connexion with sick, benefit, insurance, and friendly societies;
(*g*) In connexion with workmen's compensation;
(*h*) In connexion with naval or merchant shipping;
(*i*) For procuring the issue of Foreign Office passports;
(*j*) For excusing attendance in courts of justice, in the public services, in public offices, or at ordinary employments;

And whereas it has been made to appear to the General Council from time to time that some registered medical practitioners have given and signed untrue, misleading, or improper certificates of the above specified or other descriptions:

Now, therefore, the General Medical Council hereby give notice that any registered medical practitioner who shall be shown to have given any untrue, misleading or improper certificate, *whether relating to the several matters above specified or otherwise*, is liable to be adjudged by them to be guilty of "infamous conduct in a professional respect," and to have his name erased from the *Medical Register* under Section 29 of the Medical Act, 1858.

—I am, etc.,

NORMAN C. KING,
Registrar.

299, Oxford Street, London, W.,
Sept. 26th.

THE TECHNIQUE AND AFTER-TREATMENT OF THE RADICAL MASTOID OPERATION.

SIR,—I have been expecting for some time the publication of Mr. Milligan's paper, read to the Section of Laryngology, Rhinology and Otology at the recent meeting of the British Medical Association, and I read it with great interest and much profit in the issue of the JOURNAL of September 20th, as I am sure a great many others have.

With a good many of Mr. Milligan's opinions and methods I was already familiar, having had the favour and the great pleasure of watching him at work at the Ear Hospital and the Royal Infirmary in Manchester. The points to which Mr. Milligan directs particular attention are the treatment of the inner tympanic wall at operation, and the various methods practised to obtain the most rapid epidermization of the antro-tympanic cavity resulting from the operation.

Surgeons who have practised this class of work will readily accept Mr. Milligan's advice as to the respect due to the inner tympanic wall, and especially so when the wall is covered with diseased granulation tissue and must be curetted, because it is just in this class of case that there are likely to be fistulae of the facial canal, etc.

As regards the after-treatment, it is probably true that no one method much excels another in securing more rapid epithelialization of the cavity, and that each of the various methods Mr. Milligan describes would give equally good results in the hands of any surgeon who personally attends to the after-treatment.

Possibly some of the delay and interference with audition afterwards, when the inner wall has been curetted, arise from the fact that we are dealing with a cavity the natural lining of which is mucous membrane and not modified skin, and this is especially true of the inner antro-tympanic wall, where generally no bone is removed at operation.

Some delay, too, is often due to the delicate epithelium not being protected at its spreading edge—a practice which is always employed in healing sores on the surface of the body at other parts. Unless the epithelial edge is protected the gauze gets entangled with the young epithelium, which is therefore pulled away at every dressing, whether or not the gauze is moistened before being withdrawn. The complete epithelialization of the cavity is thus greatly retarded. When this occurs the granulations are apt to become unhealthy, oedematous, and uneven, in spite of every precaution, and the epidermization of the cavity is thus further hindered.

In a series of ten cases in the Dumfries and Galloway Royal Infirmary during the past few months I have obtained fairly rapid complete epithelialization of the cavity. I sometimes form a posterior flap, and when the flap has become adherent—generally four to five days—and when granulations have formed and the epithelium is commencing to spread from the margins of the flap, etc., I protect the spreading edge with strips of sterilized, perforated, oiled silk protective, and then pack with gauze. When I have made the flap after Mr. Milligan's method—so that it lies on the floor of the cavity—I use a soft, thin rubber tube cut spirally, with a piece of gauze in its lumen, as recommended by Ballinger, or I pass broad strips of oiled silk protective into the cavity and beyond the spreading edges, and then pack with gauze. I mop the cavity clean of all discharges at each dressing, cleanse the cavity with hydrogen peroxide, mop it dry again, and then instil compound benzoin tincture, which I leave in the cavity for a few minutes only. This medicine, by its dehydrating influence, prevents any succulency and unevenness of granulations which the recurring use of hydrogen peroxide alone tends to cause. The medicine, too, is antiseptic and unirritating on account of several of its ingredients. The cavity is thus kept sweet and dry, and healing is promoted. The use of the silk protective does away to a large extent with any objection to the use of gauze, which I consider is necessary for two weeks in cases with much discharge.

Bandaging, I think, should be discarded as soon as possible, as it tends to keep the cavity warm and moist, and thus to induce oedema of the granulation tissue, and to intensify and prolong sepsis. I have found that in nearly all my cases, notwithstanding careful, thorough curetting and pure carbolic medication at operation, the tympanic end of the Eustachian tube and the area surrounding it are the last to heal, and often give considerable trouble. If healing be delayed for some time the area comes to be bounded by a raised, whitish, somewhat indurated little ring, and a condition now obtains comparable in some respects to the callous ulcer so often associated with varicose veins of the leg. Whenever this condition presents itself I cauterize the ring, the area around the tube, and as much as possible of the tubal orifice with bluestone. The condition gradually comes to resemble a healing ulcer, and I then treat it as such.

I have faithfully tried some of the methods described by Mr. Milligan, but none has given me so much satisfaction as that which I have described.—I am, etc.,

ROBERT M. GLOVER, M.B., F.R.C.S.Edin.

Dumfries, Sept. 26th.

TURBINECTOMY.

SIR,—My attention has been drawn by a practitioner to the exceedingly drastic condemnation of turbinectomy by Sir Robert Woods in the BRITISH MEDICAL JOURNAL of September 20th, p. 738. The reason of his interest was that I had performed the operation upon a patient of his, and he feared the after-effects painted in such dark colours by the author. I was able to assure him that such bad effects were exceedingly uncommon if common sense was employed in the selection of cases, and that I had been induced to perform this operation more frequently since I had observed such good results, immediate and remote, in more experienced hands than mine. The patient mentioned had suffered several operations (septal resection, adenoidectomy, and several cauterizations) without any benefit. A carefully graduated turbinectomy relieved him completely; for the first time he can now clear his nose in a natural manner.

The only patient in whom I have observed any distinct atrophic changes showed complete recovery after mercury and iodide; by a coincidence she had also had conservative treatment at the same hands; the other day she volunteered the statement that until she had this operation with the spokeshave there had been no improvement.

When I read remarks that atrophy is a necessary consequence of this operation and not a complication, when surprise is expressed that the instruments are still manufactured and supposedly bought, I think it necessary to combat these views, which are curiously at variance with the opinions of those who have done a good number of these operations. A study of the tissues in an advanced condition of chronic hypertrophy will show that the affected tissues are quite incapable of fulfilling any function except mechanically causing mouth breathing. Remove them and nasal respiration can be resumed. The tissues of the nose become educated up to the new

conditions. It must be remembered that the main inspiratory tract is upwards into the middle and superior meatal regions, and that the passage of air through the inferior meatus is secondary to this upward flow.

Moreover, it appears that the true function of the cavernous tissue of the inferior turbinal is not yet understood. It is certain that the dry air from some forms of artificial heating installations causes the nose to swell and become dry, whereas theoretically it should collapse and secrete much mucus at the same time; whilst exercise, which should cause hyperaemia and increased secretion to warm and moisten the great increase of inspired air, causes almost entire collapse and dryness of the turbinal tissue.

Another practical point is that it will be found most easy to gauge the amount of hypertrophy requiring removal by having a strengthened pair of forceps made on the pattern of Prince's turbinectomy forceps.—I am, etc.,

Manchester, Sept. 26th. WILLIAM WILSON, M.D., B.Sc.

REX v. HAMILTON.

SIR,—You do a service to the public by giving prominence in the columns of your last issue to a letter signed "S. R. Deane" concerning the above lawsuit. The writer suggests that members of the medical profession should help the defendant to meet the very heavy costs. May I add an amendment to the proposal, namely, that outsiders like myself, who have been struck by the gross injustice of the result of such an action, should also be allowed to offer a helping hand? Any one of us in any career in life may find himself at any moment in a like strait. One and all, we are liable—as justice is now interpreted—to be accused without a particle of foundation of a flagrant breach of the law. The Crown itself may proceed against us, and, after a wholesale expenditure on both sides of time, trouble, brains, and hard cash, the jury may fling aside the evidence for the prosecution and declare there is no case, thus putting a stop to further proceedings and saving our honour and credit. But there remain the huge bills to be paid, bills which in this particular instance cannot have meant much under £1,000 to each side. Since the days of Confucius we have been taught by our highest exemplars to "do unto others as we would that they should do unto us," and I, for one, shall be only too glad to add a practical proof of my sympathy with Dr. Hamilton to any list of subscribers presented to me.—I am, etc.,

London, W., Sept. 27th. F. M. GALLAHER.

SIR,—May I ask your indulgence in placing before our members a petition to help Dr. Hamilton to defray the heavy legal expenses (that is, about £800) incurred in his defence. I think to all who followed the evidence and read the remarks of the judge, the case appears to be one that should never have been brought against him. It clearly shows that none of us are ever safe. Many, both lay and medical, have written expressing their sympathy, and suggesting that a fund should be started. The following would be pleased to act on a committee:

Peter Daniel, Esq., F.R.C.S., 1A, Upper Wimpole Street.
Mrs. Moran, Mill Hill House, Barnes.
Dr. S. R. Deane, Lincoln.
Dr. Poole, Wandsworth.
Dr. Gimblett, 86, Sutherland Avenue.

Thanking you in anticipation.—I am, etc.,

London, W., Sept. 30th. W. H. GIMBLETT, M.D.

THE WORK AT THE MADRAS OPHTHALMIC HOSPITAL.

SIR,—During the recent meetings of the Oxford Ophthalmological Society, of the British Medical Association, and of the International Congress, a number of medical men asked if they might visit Madras for the purpose of seeing the work at the Government Ophthalmic Hospital there. I had at that time every intention of returning to Madras at the end of this year, and I told them that I should be glad to welcome them at my clinic. In the meantime my plans have been changed, and I am not returning to India, for the present at least. Unfortunately, I have not got the names or addresses of a number of those who thus approached me, and am therefore unable to communicate with them direct. I should be extremely sorry if, owing to my inadvertence in not taking the names of all such, any inconvenience or disappointment arose to a visitor after so long a journey as that to Madras. I shall, therefore, be greatly obliged if you will give me this opportunity of letting the matter be known. As a number of those who wished to visit Madras came from India, America, and the Continent, I shall be greatly obliged if foreign papers would reproduce this letter. The officer who is acting for me in the Madras hospital will extend a hearty welcome to any who still care to go there. I can only again express my regret if my own unavoidable change of plans has caused inconvenience to others, and my hope that by giving as early notice as possible I have been able to minimize such inconvenience.—I am, etc.,

R. H. ELLIOT, Lieut.-Col., I.M.S.,
Superintendent of the Government Ophthalmic
London, W., Sept. 30th. Hospital, Madras.

SPECIAL HOSPITALS.

SIR,—Holidays and pressure of work on return have interfered with reply to criticism as to the above. The delay has been advantageous in that it has afforded three of the honorary staff of the Liverpool Eye and Ear Infirmary time to express themselves. I shall hope to let you have my reply at an early date.—I am, etc.,

Liverpool, Sept. 29th. THOMAS H. BICKERTON.

Public Health AND POOR LAW MEDICAL SERVICES.

THE ADDITION OF SUGAR TO BUTTER.

A CORK butter exporter last week appeared before the Liverpool stipendiary magistrate as defendant in respect of a summons for having sold butter containing cane or beet sugar. The analyst had found 1.2 per cent. of cane or beet sugar, which he regarded as a foreign ingredient. In cross-examination he said that unless enough sugar were used it was not a preservative at all, that he was not aware that it had been used in curing Irish butter for two hundred years, and that the Act did not forbid the use of sucrose (cane or beet sugar). In reply to the stipendiary magistrate he said that the sample of butter he had examined contained from 4 to 5 per cent. of salt, which was sufficient as a preservative. Mr. White, an inspector of the Irish Board of Agriculture, said that sugar was not used for the curing of butter in Ireland, nor was it used for the preservation of Danish butter. The defendant said that he had used sugar in butter for thirty-five years, that it was used by others, and that it was added to suit public taste, which wanted a mild salted butter; salt without sugar was not sufficient as a preservative unless 6 or 7 per cent. of salt were used. He knew that French butter was cured with sugar, and believed that it was also used with Danish butter. The stipendiary, in dismissing the summons, said that he thought the Act of 1887 contemplated the presence of other preservatives beside salt. It had been proved that sugar was a preservative, and that its presence with salt was not an infringement of the Act; he offered to state a case if the prosecution desired.

THE usual monthly meeting of the Executive Committee of the Medical Sickness, Annuity, and Life Assurance Society was held at 429, Strand, W.C., on September 19th, Dr. F. J. Allan in the chair. It was reported that, contrary to expectation, the summer months had shown very little falling off in the claims; new business was well up to the average, and the steady growth of proposals for additional benefits received indicated the satisfaction of members with the society. The half-yearly balance sheet considered at this meeting showed that the reserves now amount to nearly £260,000, and each fund shows an increase. A letter was read from the widow of a member expressing her thanks for the grant made, through the society's recommendation, by the Royal Medical Benevolent Fund, and asking for support for her son's election for Epsom College next June. The society subscribes largely to these two institutions, and has been instrumental in obtaining many foundation scholarships for the sons of deceased members and grants of money for their widows. Prospectuses and all information can be obtained on application to Mr. Bertram Sutton, Secretary, Medical Sickness and Accident Society, 33, Chancery Lane, London, W.C.

Universities and Colleges.

UNIVERSITY OF LONDON.

Matriculation.

THE Senate recently adopted two resolutions with regard to the acceptance of examinations as exempting from the London matriculation examination. On and after September 1st, 1914, the senior grade certificate of the Intermediate Education Board for Ireland will not be recognized. In and after this year the regulations for the acceptance of the Oxford senior local certificate have been altered, and require that the student must have passed at one and the same examination in English composition, including essay, general literature, and grammar, and must have obtained or reached the standard of honours in the first or second class at that examination.

Advanced Lectures in Medicine.

The following courses of lectures have been arranged at the institutions indicated for the session 1913–14:

Royal Army Medical College.—Major S. Lyle Cummins, M.B., B.S.: Three lectures during the first term on enteric fever.

Hospital for Sick Children, Great Ormond Street.—Dr. S. A. K. Wilson: One lecture during the second term on apraxia, its clinical and localizing values.

Middlesex Hospital.—Dr. H. Beckton: One lecture during the second term on the action of radium upon animal cells.

London Hospital.—Dr. H. L. Tidy: Two lectures during the second term on the pathological excretion of nitrogen by the skin and the resulting changes in the urine.

University College.—Dr. Charles Bolton: One lecture during the third term on recent observations on ulcers of the stomach.

St. Thomas's Hospital.—Dr. H. MacLean: Three lectures during the third term on carbohydrate metabolism in health and diabetes.

The lectures, to which admission is free, are addressed to advanced students of the University and to others interested in the subjects dealt with.

Advanced Lectures in Physiology.

The following lectures will be delivered during the first term of the session 1913–14:

Guy's Hospital.—Eight lectures on the physiological significance of acidosis, by Drs. E. L. Kennaway and E. P. Poulton, on Thursdays, at 4 p.m., beginning on October 9th.

King's College.—Four lectures on the cerebro-spinal fluid, by Professor W. D. Halliburton, F.R.S., and Professor W. E. Dixon, F.R.S., on Mondays, at 4.30 p.m., commencing on November 3rd.

Lectures on Protozoology.

A course of from twelve to fifteen lectures on the protozoa parasitic in man will be given by Professor Minchin, F.R.S., at the Lister Institute of Preventive Medicine, at 5 p.m. on Tuesdays and Fridays during the second term. The lectures, which are free by ticket, will be addressed to Honours B.Sc. students and to medical men, and will be followed by exhibits of preparations as occasion requires.

Chadwick Lectures in Hygiene.

A course of three lectures under the Chadwick Trust, illustrated by diagrams and lantern slides, on the place of the open-air school in preventive medicine will be given by Sir George Newman at the University, at 5 p.m., on November 4th, 11th, and 18th. The lectures are free and are addressed to advanced students of the University and to others interested in the subject.

UNIVERSITY COLLEGE.

Dr. W. C. McC. Lewis having been appointed to the chair of physical chemistry in the University of Liverpool, is succeeded by Dr. R. E. Slade as assistant to the Department of Chemistry.

Dr. A. J. Clark, assistant in the Department of Pharmacology at University College, has been appointed lecturer on pharmacology at Guy's Hospital Medical School.

ST. MARY'S HOSPITAL.

The entrance scholarships at the medical school have been awarded as follows: The two *University Scholarships* (value 50 guineas each), Mr. S. C. Dyke, B.A., Exeter College, Oxford, and Mr. W. H. Thomas, University College, Cardiff; the two *Open Scholarships* in natural science (value £75 each), Mr. A. J. Cokkinia, International College, Smyrna, and Mr. G. W. Davies, Epsom College; the *Palmer Scholarship* (value 25 guineas), Mr. G. MacAlaway, Mount St. Mary's College, Chesterfield; the *Epsom College Scholarship*, Mr. B. Thomas.

ST. BARTHOLOMEW'S HOSPITAL.

The competitions for entrance scholarships at the Medical School have resulted in the following awards: The two Senior Scholarships in Natural Science (value £75 each) to Mr. G. K. Bowes, Christ Church, Oxford, and Mr. R. A. Mansell, Emmanuel College, Cambridge; the Junior Scholarship in the same subject (value £150) to Mr. J. P. Ross, of the Preliminary Science Department of the School; and the Jeaffresson Exhibition in Arts to Mr. R. J. Perkins of the Bedford Modern School. The second scholarship in Arts (value £100) was divided between Mr. J. Dick, of Epsom College, and Mr. L. D. Porteous, of Huddersfield College, whose papers were adjudged of equal merit.

VICTORIA UNIVERSITY OF MANCHESTER.

THE following candidates have been approved at the examination indicated:

FIRST M.B. (*Part I. Inorganic Chemistry and Physics*).—J. C. T. Fiddes. (*Part II. Elementary Biology*).—J. Charnley, J. C. T. Fiddes, T. E. Forshaw, J. B. Higgins, J. Yates.

CONJOINT BOARD IN ENGLAND.

THE following candidates have been approved at the examinations indicated:

FIRST COLLEGE (*Part I. Chemistry; and Part II. Physics*).—*W. B. S. Andrew, †H. C. Apperly, E. R. Batho, *J. R. S. Bowker, †G. W. Coombes, *A. Faiq, *N. E. Fasken, T. C. Higgins, *J. Hollings, †M. Ibrahim, S. L. Izpinger, B. L. Laver, A. M. Mishad, W. P. Nelson, C. B. Phillips, C. G. J. Rayner, J. S. L. Roberts, †C. W. Tomkinson, *F. F. Wheeler, G. Winter, S. Yahilevitz. (*Part III, Elementary Biology.*)—E. H. Bryant, R. Calvo, J. Hollings, C. H. Macklin, W. P. Nelson, M. A. Tewfick, C. W. Tomkinson, H. P. Warren, E. M. Webster, S. B. Winnick, S. Yahilevitz.

* Passed in Part I only. † Passed in Part II only.

Obituary.

E. E. GOLDMANN, M.D.,

EXTRAORDINARY PROFESSOR OF SURGERY IN FREIBURG.

DR. EDWIN E. GOLDMANN, of whose researches on the vital staining of the central nervous system Dr. Mott has enabled us to give some account on another page, was the son of Mr. B. N. Goldmann, and was born at Burgersdorp, South Africa, on November 12th, 1862. He received his early education at the Albert Academy at that place, but at the age of 14 returned with his parents to Europe and was put to school at Breslau, where he showed special capabilities, especially in music and mathematics. His medical education was received at the University of Freiburg, and he afterwards worked at microscopic anatomy under Professor Weigert at Frankfurt-on-Main. Later he became assistant in the surgical clinic at Freiburg, and in 1891 qualified as privat-docent. In 1895 he was appointed extraordinary professor and became surgeon to the Deaconess's Hospital in Freiburg.

Goldmann gave himself up at an early stage of his career to biological chemistry, and worked under Professor Ehrlich in the Institute for Experimental Therapeutics at Frankfort, of which he was named an associate. He was attracted by the possibility of staining the tissues during life, and made many investigations to ascertain what stains might best be used for this purpose. Eventually he discovered that animals injected with pyrrhol blue and isamine blue retained their health, although the dyes had been taken up by certain granular cells in various organs. He found that the behaviour of the cells to the stains was a guide to the determination of their functions in reference both to the normal products of metabolism and to their reaction to pathogenic substances. Cells which took up the stain were found also to take up fat, glycogen, and iron. He showed also that in the placenta certain granular cells have the power of taking up neutral material from the maternal blood and storing them for a time before they are passed on to the fetal circulation. He described his results in memoirs published in the *Beiträge zur klinischen Chirurgie* and in separate publications issued in 1911 and 1912. With regard to this work, Professor Ehrlich said in an article published in the *Times* on the day following Goldmann's death: "He reached the summit of his work in the last few years, during which he prosecuted his studies, which must be regarded as classical, in the staining of living tissues. Goldmann recognized clearly that if we desire to know and study the functions of the living cell the staining of living tissues offers the most profitable means. There were previously only a few works dating from an older generation, such as those on methylene blue, but they, corresponding to their own time, followed an incomplete technique. Here came in Goldmann's work. He succeeded in discovering a method of carrying out an exact pursuit of *intra vitam* staining in microscopic sections. The staining material, pyrrhol blue, possesses the peculiarity of colouring a very special kind of cells which are found in the connective tissue and of making them visible to the eye, while the dye allows certain

round granules contained in these cells to show up distinctly, and in an intensive blue. Now Goldmann was able with the help of his method completely to clear up the great significance of the function of these cells, and to show that both in normal functions, as for example in digestion, and also in the majority of disease derangements, as in the case of tuberculosis and carcinoma, they play a very important part. His last important work also, *Über die Vitalfärbung am Centralnervensystem*, dealt with that method and arrived at important conclusions concerning the nutrition of the central nervous system and the circulation of the cerebro-spinal fluid." It is of this research that an account is given by Dr. Mott in the article published at page 871.

Goldmann was actually engaged in this fruitful line of work and had formed projects for extending it in various directions when he became the victim of cancer. He accepted his fate with resignation and bore his physical sufferings with fortitude. But the sacrifice of the hopes he had formed of carrying on his investigations to the solution of various problems which had presented themselves to him was a bitter disappointment. He went on with his work as long as his strength permitted him. His death at the age of 51 is a great loss to science.

Professor Goldmann married, in 1906, the daughter of Mr. Bosworth-Smith, of Bingham's Melcombe, Dorset, and is survived by his widow and two children. Professor Goldmann spent some time in study in London, and was a Fellow of the Royal Society of Medicine. He was a brother of Mr. C. S. Goldmann, M.P. for Penryn and Falmouth, and had many friends in England.

GAVIN PATERSON TENNENT, M.D., F.R.F.P.S.G.,
CONSULTING PHYSICIAN, WESTERN INFIRMARY, GLASGOW.

Dr. Gavin P. Tennent died at his Glasgow residence on September 13th, at the age of 67. He was the son of Mr. James Tennent, of Strathaven, and received his early education at Crosshill School, in that parish. He graduated M.B., C.M. in the University of Glasgow with high commendation before he was 21 years of age, and took the degree of M.D. in 1870. After studying in Berlin, he was appointed resident assistant surgeon to the Royal Infirmary, Glasgow, and there came under the influence of Lister and Gairdner. He was afterwards resident physician to Glasgow City Fever Hospital, where he worked with the late Dr. J. B. Russell.

In 1872 he commenced private practice, and acted as assistant to the late Professor Leishman; from 1868 to 1880 he assisted the late Professor Cowan in the materia medica department of the university. When the Western Infirmary was opened he became physician to the outdoor department, and in 1881 was elected a full physician in charge of wards, on the opening of the Freeland wing. He resigned in 1896 after twenty-two years' service, and was appointed the first honorary consulting physician—an honour of which he was justly proud. Dr. Tennent was unmarried, and was the last survivor of his own immediate family. He was in practice as a consulting physician until the beginning of the present year, when the death of his only remaining sister proved a shock from which he never recovered. He was a popular teacher during his period of work at the Western Infirmary, and relinquished general practice when appointed to the staff. His lectures were always very carefully prepared, and as a clinical teacher at the bedside he was held in high esteem by his students. His name will always be revered by those who had the privilege of listening to his teaching.

By his will Dr. Tennent bequeathed £25,000 to the University of Glasgow, to be applied for such objects or object in connexion with the Faculty of Medicine as the trustees may determine. He bequeathed the residue of his estate to the Western Infirmary, the Royal Infirmary, the Victoria Infirmary, and the Royal Hospital for Sick Children, Glasgow.

A familiar figure will be missed in the south side of Glasgow by the death of Dr. James Provan, who became a Licentiate of the Royal College of Surgeons, Edinburgh, in 1864, and took the M.D. of Glasgow the same year. He was for many years an officer of the First Lanark Artillery Volunteers, and retired ten years ago with the rank of Surgeon-Colonel. He was an enthusiastic collector of pictures and curios, his house being a veritable museum. He is survived by his wife.

Dr. Archibald Pearson, another south-side practitioner in Glasgow, died within a few days of Dr. Provan. Dr. Pearson had been in practice for fifty years, and was a student under the late Lord Lister, being one of his dressers at the Glasgow Royal Infirmary. He began his professional career in the Scottish Highlands, but settled in Glasgow more than forty years ago. He was J.P. for the County of Inverness, but took no other part in public life. He is survived by a widow and grown-up family, one of his sons, a medical man, having been associated with his father in practice.

At Cromarty on September 21st the prolonged illness of Robert Crerar, M.B., came to an end. He had been ailing for some considerable time from chronic cardiac affection, and in spite of several periods of complete rest from work he became gradually weaker and lost ground. Dr. Crerar was a native of Perthshire and a graduate of Edinburgh University (1879). His early professional life was spent on the west coast of Scotland, and during his arduous work there he was the victim of an accident to his right ankle, which caused him permanent stiffness and was a hindrance to free locomotion. He was a man of marked ability, was well read in general literature, and was a keen angler. He was a delightful companion, full of a quiet humour, kind-hearted, and withal shrewd. He will be greatly missed in the circle in which he has worked for so many years. Dr. Crerar was unmarried, and is survived by his sisters.

Medical News.

Mr. W. D. Caröe has been elected Master of the Plumbers' Company in succession to Sir T. Vezey Strong, and Dr. F. J. Waldo and Mr. Edmond Knight have been elected Wardens.

The United Services Medical Society will hold its first meeting for the session 1913–14 on October 9th, when the presidential address will be delivered by Colonel B. M. Skinner, M.V.O., A.M.S.

The annual dinner of past and present students of the London School of Tropical Medicine will be held at Prince's Restaurant, Piccadilly, on Friday, October 24th, when the chair will be taken by Dr. F. M. Sandwith.

A practical course on growth in children will be given at the Institut J. J. Rousseau, Geneva, by Dr. Paul Godin, from October 6th to 16th. The subscription to the course is 40 francs. Particulars can be obtained from the Director of the Institute, 5 Place de la Taconnerie, Geneva.

The late Mr. Lancelot Foster bequeathed £1,000 to the York Charity Commissioners, with instructions that they should make gifts to aged women who were unsuccessful applicants for the benefits of hospitals in York. He also bequeathed £1,000 to the York Lunatic Asylum, and a further £1,000 to the York County Hospital for the maintenance of two children's cots.

The honorary secretaries of the Section of Odontology of the Royal Society of Medicine have issued a notice with regard to grants in aid of scientific research in connexion with dentistry which the committee of that Section is enabled to make. Particulars can be obtained on application to the honorary secretaries of the Section at the house of the Royal Society of Medicine, 1, Wimpole Street, London, W.

We are asked to state that in response to numerous requests it has been decided to defer the closing of the Historical Medical Museum at 54A, Wigmore Street, until October 31st. During October it will remain open from 10 a.m. to 6 p.m. daily, and from 10 a.m. to 1 p.m. on Saturdays. After this date it will be closed for a few months for rearrangement as a permanent museum. It is proposed to reopen the museum in its permanent form in the spring of next year.

A PROVINCIAL sessional meeting of the Royal Sanitary Institute will be held at Newcastle-upon-Tyne on October 17th, when two discussions will take place. The first, on some points in the relationship of human to bovine tuberculosis, will be opened by Professor H. J. Hutchens, bacteriologist to the Corporation of Newcastle, and the other, on housing problems in a northern industrial town, by Dr. S. J. Clegg, Assistant M.O.H., and Mr. William Hudspeth, Chief Inspector of Nuisances, Newcastle-upon-Tyne.

ST. ANDREW'S HOSPITAL, Dollis Hill, which was opened by the Lord Mayor and Sheriffs on September 26th, at present provides accommodation for 50 patients, but the number of beds will eventually be raised to 100. A French Roman Catholic lady placed a sum of money at the disposal of Cardinal Bourne for the erection of the hospital, but there is at present a debt of £10,000 upon it. An inclusive charge of 2½ guineas a week will be made. The hospital was described in the JOURNAL of November 30th, 1912, p. 1574.

AN evening performance for the joint benefit of Charing Cross and the French hospitals is to take place at the Coliseum on Saturday, October 11th, in the presence of the King and Queen. The large number of distinguished artists who have agreed to contribute items to the programme includes Madame Sarah Bernhardt and Miss Ellen Terry. Sir Alexander Mackenzie will conduct his overture, "Britannia," and Sir Henry Wood the "Marseillaise," with which the performance will conclude.

THE clinical lectures and demonstrations for the winter term at the National Hospital for the Paralysed and Epileptic, Queen Square, W.C., will begin on Tuesday next, October 7th, when Dr. Gordon Holmes will give the first of two lectures on regional diagnosis. Other lectures of the course, which will continue at 3.30 p.m. on Tuesdays and Fridays until December 12th, will be given by Drs. James Collier, Frederick Batten, Aldren Turner, James Taylor, Farquhar Buzzard, Risien Russell, Howard Tooth, Hinds Howell, Grainger Stewart, Kinneir Wilson, and Mr. Percy Sargent.

THE ninth quinquennial festival of the Royal Albert Institution, Lancaster, will be celebrated on October 21st. After the annual general meeting the Countess of Derby will open the new building of the farm colony, when an address will be delivered by Mr. Arthur Hill Trevor, Commissioner in Lunacy. In the afternoon a public meeting will be held under the presidency of the Earl of Derby, and after speeches by him and Lord Richard Cavendish, Chairman of the Central Committee, addresses will be given by Sir T. Clifford Allbutt on the feeble-minded (an historical retrospect), by Sir James Crichton-Browne on the future of the Royal Albert Institution, and by Dr. C. Hubert Bond, Commissioner in Lunacy, on the after-care of the feeble-minded.

AT the first meeting of the session of the Medical Society of London, at 8.30 p.m. on Monday, October 13th, the incoming President (Sir David Ferrier) will deliver an opening address, and Dr. Farquhar Buzzard will read a paper on varieties of facial spasm and their treatment. At 8 p.m. on the same day a general meeting will be held for the transaction of business. A discussion on visceral complications met with in hysterectomy for fibroids and the best method of dealing with them will be introduced by Sir John Bland-Sutton on October 27th, and on November 10th Dr. J. S. Risien Russell will open a discussion on the treatment of neurasthenia. The Lettsomian lectures will be delivered in February and March by Dr. F. M. Sandwith, who has chosen dysentery as the subject for the course. The anniversary dinner of the Society will take place at the Whitehall Rooms, Hôtel Métropole, on March 4th, 1914.

As many as eighteen Chadwick lectures are in view this autumn; the first three, which dealt with the practical problems of housing reform, were delivered this week in Glasgow by Mr. W. E. Riley, the superintending architect of the London County Council. The three lectures at Bristol will be delivered by Dr. Leonard Hill, who will deal in turn with the quality of expired air and air in crowded and confined places, radiant and convected heat, and the influence of open air and exercise on health. In London Sir George Newman, as announced elsewhere, will discuss the place of the open air school in preventive medicine in three lectures; while Dr. Killick Millard, whose lectures will not be delivered until January, will consider vaccination in the light of modern experience. Military hygiene and the history of physical efficiency in the army is the general subject of the three lectures to be delivered in November at Southampton by Surgeon-General Evatt.

Letters, Notes, and Answers.

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C., on receipt of proof.

TELEGRAPHIC ADDRESS.—The telegraphic address of the EDITOR of the BRITISH MEDICAL JOURNAL is *Aitiology, Westrand, London*. The telegraphic address of the BRITISH MEDICAL JOURNAL is *Articulate, Westrand, London*.

TELEPHONE (National):—
2631, Gerrard, EDITOR, BRITISH MEDICAL JOURNAL.
2630, Gerrard, BRITISH MEDICAL ASSOCIATION.
2634, Gerrard, MEDICAL SECRETARY.

☞ *Queries, answers, and communications relating to subjects to which special departments of the* BRITISH MEDICAL JOURNAL *are devoted will be found under their respective headings.*

QUERIES.

E. asks for advice in the treatment of a case in which vomiting has persisted for four months after gastro-enterostomy. The patient, who brings up large quantities of bile, has been treated by soda, washing out the stomach, and sleeping propped up, but to no purpose. There is no other symptom beyond vomiting.

FLOORS OF OPERATING THEATRES.

A HOSPITAL COMMITTEEMAN inquires as to the best material for the construction of the floor of a hospital operating theatre. He finds mentioned in a current encyclopaedia various materials consisting of finely ground sawdust and magnesium chloride with or without an admixture of asbestos. He desires to know whether these are satisfactory, and whether they can be laid and repaired without employing highly skilled special workmen.

*** The question raises an important point, and we are glad to be able to publish the following notes by a hospital superintendent of large experience. He writes: Dolomite (and other similar patent floors) costs something like 5s. a square yard. I have tried several, but none of them, in my opinion, are suitable for hospital floors. Both the laying and repairing of these materials require the employment of highly skilled workmen, and they cannot be compared with terrazzo, which costs 8s. a square yard. This is probably the best material, when properly laid, for an operating theatre; and for wards nothing can be compared with a teak floor, either laid in 3 in. boards or as parquetry.

INCOME TAX.

B. AND G. have equal shares in the receipts of a practice, each paying certain expenses, such as motor upkeep expenses. It is asked whether the surveyor of taxes is correct in assessing them to the income tax as a firm, and, if so, how the total duty payable is to be apportioned between the partners.

*** B. and G. appear to be carrying on the practice "in common with a view to profit," and therefore must be regarded as being in partnership. The Finance Act of 1907 abolished the former right of separate assessment of partners' shares in a firm's profits, but Section 20 of that Act provides that the income of an individual partner may be "treated separately for the purpose of exemption, relief, or abatement." Accordingly it appears that the surveyor of taxes is correct in assessing the profits of the firm in one sum, but that this method of assessment must not be allowed to affect the partners' claim to relief, etc. The notice of assessment which is usually issued shortly after the assessments are made would show the total amount of abatements, children's allowances, etc., made from the firm's assessment, and Messrs. B. and G. could doubtless calculate their respective shares from that information, but the surveyor of taxes would probably furnish the full details at once if requested.

ANSWERS.

H. J. T. writes to recommend "Senex" to cleanse the mouth with Barff's boro-glyceride, as much as will lie on a sixpence dissolved in a quarter of a tumbler of water, several times a day, and take $\frac{1}{10}$ grain of calomel three times a day.

SCOLIOSIS.

DR. J. P. BOLTON (Nottingham) writes: "Inquirer" will find an excellent paper on this subject in the BRITISH MEDICAL JOURNAL of August 30th, p. 536, by A. Mackenzie Forbes.

LETTERS, NOTES, ETC.

HARVEIAN SOCIETY MINUTE BOOKS.

DR. G. DE B. TURTLE, Secretary of the Harveian Society of London, 81, Cambridge Terrace, Hyde Park, W., writes that he is endeavouring to trace the minute books of the council of the society from 1852 to 1878 and the minute books of proceedings from 1873 to 1889. He will be glad to receive any information from any past officer or member of the society as to the whereabouts of the volumes.

HERPES AND VARICELLA.

DR. AGNES SAVILL (London) writes: Dr. Mina Dobbie has brought to my notice the case of a boy, aged 2½, who had varicella in May of this year; then in September, after a severe nervous shock, he developed a herpetic eruption, which appeared on successive days, on the right buttock and groin, the left shoulder (suprascapular and clavicular regions), the right occipital area, and slightly on the left forearm. The time elapsing between the varicella and the appearance of the herpes is, perhaps, longer than any mentioned by your previous correspondents, but is worth record.

DR. JAMES A. MILNE (Stepney) writes: I should like to add another case to those in the correspondence in the BRITISH MEDICAL JOURNAL of September 13th, 1913, suggestive of some connexion between herpes zoster and varicella. A lad, J. K., aged 20 years, was admitted to Her Majesty's Hospital (in connexion with Dr. Barnardo's Homes) with severe herpes zoster of the face and neck. On August 1st (that is, sixteen days later) a boy, P. T., aged 5 years, in an adjoining bed, showed typical varicella. He had been in the ward for six weeks, and there had been no other case of either disease. In the cases recorded in the JOURNAL of September 13th, with the exception of one case where the two diseases were apparently contemporary, the intervals between them were fourteen days, fourteen days, thirteen days, and fifteen days. This fairly definite interval seems to suggest still further some connexion, and it, of course, corresponds with the average incubation period of varicella.

ANAPHYLAXIS AND COCAINE.

DR. H. B. BLACKBURN (London) writes: So much highly interesting matter has been written within the last year or two on the subject of anaphylaxis that the system of what is called "anti-anaphylaxis" by Professor A. Besredka may be possibly applied in the case of drugs other than the animal serums. Many years ago the drug cocaine and its hypodermic use was introduced, and—like many a new remedy—was hailed with delight by the profession, but soon it was found that it produced much heart depression and other unpleasant or dangerous symptoms, and then—again like many new remedies—it was more or less discarded. Now, to a few of my medical and dental friends I have related my experience in the hypodermic use of this drug—an opinion which I think of sufficient interest to publish. I had been troubled with ingrowing toenail from ever since I could remember. One day, about twenty years ago, when it had been for some days giving me much pain through kicking against something, I set myself thinking what could be done to bring about a permanent cure. Having finished my day's work, I got a good light, lighted my pipe, and injected cocaine; I soon became faint. I lay down until the faintness had passed off, injected more cocaine until the toe was perfectly insensible, *with not the least return of faintness*. I then cut down through the middle of the nail, and again about a quarter of an inch from its edge, making each incision well beyond the matrix, then dissected off the nail from the tissues under it, and above it at the root, dissected out the matrix and sutured with horsehair, having to renew the injection. Next day I was walking and cycling as usual, and the cure is permanent. I have done the same operation for others several times since, and always with success. But my point is chiefly this—that I reasoned on the action of cocaine, and, having reasoned, experimented on myself, and, for operative purposes, on others, and I have found that many times the ordinary dose may be injected if only a small one be given at first. If, as often happens, the patient becomes faint, lay him down to recover, and then you may go on injecting as often as necessary, and this without fear. I gave myself one evening 4 grains in two hours, feeling just as usual after the first faintness, except for an unpleasant flow of saliva. Now cocaine and other more or less similar drugs, and, I believe, a synthetic cocaine, are employed. Personally I have no experience of them, being satisfied with cocaine, which I regard as quite safe if used as indicated. I have so used it many hundreds of times without seeing more than the first faintness, which is common. I formerly explained this phenomenon by assuming that cocaine is a heart-depressant only at first. Now I ask, can this be "drug anti-anaphylaxis"?

BRUSHING THE TEETH.

MR. HORACE E. H. TRACY (Bury St. Edmunds) writes: The question of the advisability of giving children toothbrushes raised by Dr. Dobell in the JOURNAL of August 30th, is one of very great importance to the future health of the individual, and one on which authorities are apt to differ. But very few will agree with the assumption that caries, as a general rule, commences in those parts not shielded with enamel. The commonest type, particularly in children, is the interstitial, beginning at the spots where adjacent teeth, in billiard parlance, "kiss." Nature has, as a matter of fact, increased the thickness of enamel at this vulnerable spot. The problem of what to do for the best in children is complicated by the presence of the wonderful acid-resisting membrane which surrounds the newly erupted tooth, and is obviously, I think, intended to shield the teeth through the milk era. Now I quite agree with Dr. Dobell that tooth brushing as carried out by the usual individual never does anything to check this interstitial caries. But so long as we persist in our various errors of diet so long will we depend upon this valuable adjunct, properly used, to ward off caries. The brush should be used with a nearly circular movement, so that the hairs will run up one interdental space, sweep round the neck of the tooth parallel to the semicircular margin of the gum and return down the next interdental space. My own belief is that, as long as we continue to consume sticky biscuits, sweets, and meats cooked to rags in boilerettes, etc., we should teach all children about the age of 2½ to 3 years, according to their intelligence, to use a dense yet soft toothbrush according to the foregoing principles. At the same time one must remember that one sees many mouths that have never known a toothbrush in a perfectly healthy condition through the "antiquated" dietary habits of the owner.

DENS writes: I would venture to suggest that Nature intended the forefinger to be used as a toothbrush. No brush with a rigid handle can possibly reach parts which can be reached with the finger. Even if the handle were jointed it would lack the adaptive mechanism of the digital muscles. With the finger not only the outside but the inside of the teeth and the gums, the sulci between the jaws and the cheeks, the roof and the floor of the mouth can all be reached and rubbed with ease and without harm, the rugae of the digital skin providing sufficient abrasion but no scratching.

COINCIDENCE OR TELEPATHY?

DR. FRED. PHILLIPS (House-Surgeon, Durham County Hospital) writes: The following instance of telepathy, or, as some may regard it, extraordinary coincidence, may be deemed of sufficient interest to merit publication. A married woman, Mrs. D., aged 35, was admitted to the Durham County Hospital on July 24th, 1913, suffering from tuberculous peritonitis. She was perfectly at ease, both mentally and physically, for the first four days after her admission, but on the afternoon of the fifth day, July 29th, about 4 p.m., she was noticed to be weeping. When questioned as to the cause of her sudden mental depression, she merely stated that she wished to home, and, in fact, was bent on going home, as she "felt something had gone wrong." At 5 p.m. her husband, a miner, was admitted moribund to this institution, having been buried beneath a quantity of stone and coal; he died about 9.30 p.m. At the time of his admission it was thought advisable, having regard to his wife's serious condition, to withhold the news from her for the time being, and as death ensued so late in the evening, it was decided, in order not to disturb her night's rest, not to inform her till the morrow morning, July 30th. The nursing staff was strictly enjoined to this effect, and I can vouch for their having faithfully observed the injunction. At 10 p.m., her husband being by this time a corpse, she was still depressed and disinclined to sleep; there being nothing more in her mind to account for this depression than this ill-defined "feeling of something having gone wrong." Thinking that she might, despite precautions, have got news of her husband's accident and death, I asked her whether she had received any bad news or whether anything had happened during the day to disturb her peace of mind; to this she replied in the negative, and shortly afterwards fell to sleep and had a good night's rest. A further detail of the case is not, perhaps, without interest. On the following morning, July 30th, the sad news was gently broken to her, and on July 31st, in deference to her oft-repeated and urgent entreaties to see her husband's body before its removal, permission was granted. She was wheeled down to the mortuary, and within an hour and a half of her return to the ward she developed hemiplegia, with which she died comatose three days later; necropsy showed this to be due to an extensive cerebral haemorrhage.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Seven lines and under	0	5	0
Each additional line	0	0	8
A whole column	3	10	0
A page	10	0	0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Wednesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *postes restante* letters addressed either in initials or numbers.